THE IRON AGE

A Review of the Hardware, Iron, Machinery and Metal Trades.

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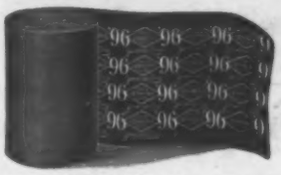

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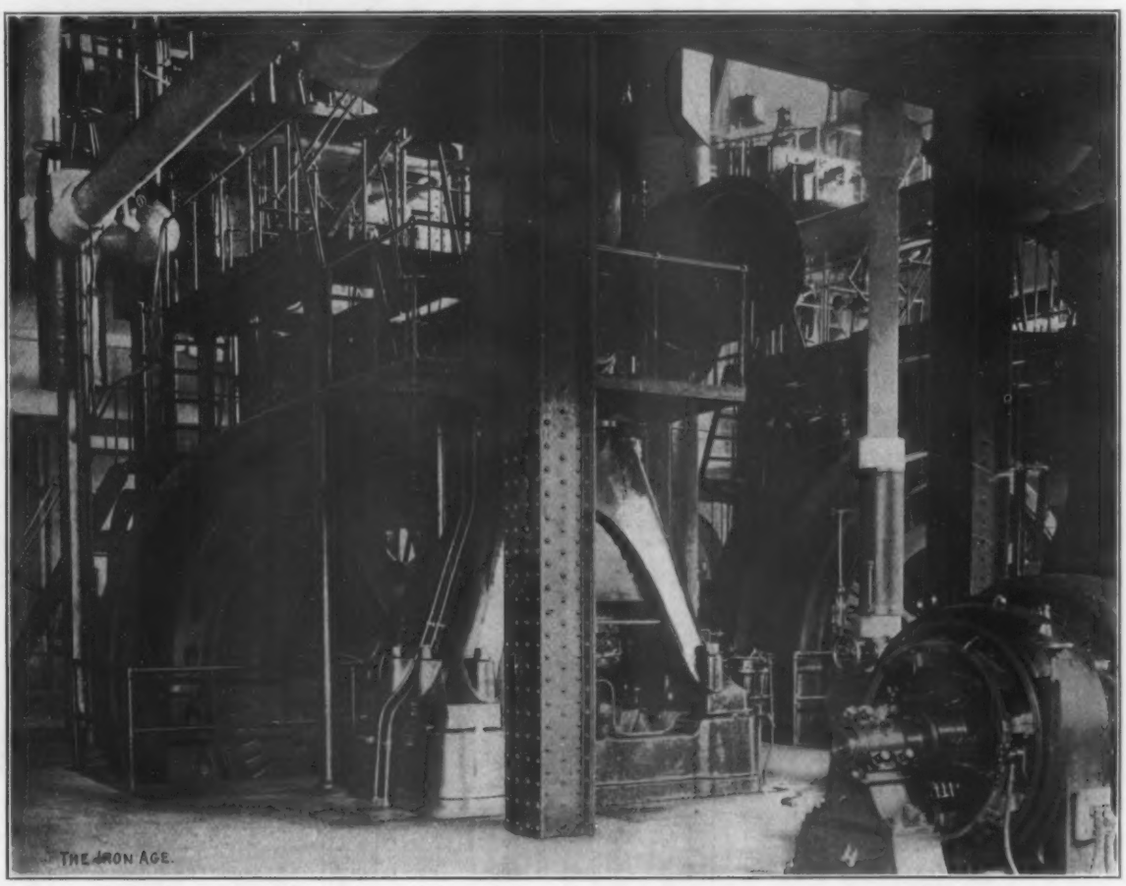
THE IRON AGE

THURSDAY, SEPTEMBER 15, 1904.

The Phipps Power Building, Pittsburgh, Pa.*

The Phipps Power Building in Pittsburgh, Pa., was erected to furnish power from a central station to a group of buildings closely adjacent to it upon the property of the owner, some of these buildings being already in existence, others projects to be carried out in the future. It occupies a plot of ground 100 feet square fronting on Cecil alley, between Penn avenue and Duquesne way, and lies in a fairly central position with regard to the properties it is to serve. The advantages of such a central plant will be appreciated; conspicuous among them being that the basements of all other buildings are left free for other purposes; and the concentration of power under one management results in the installation of more efficient machinery, and a marked reduction in the number of high priced attendants. The Bessemer Building, a new office structure, now being supplied with light, heat and power from this center, is the forerunner of others which are soon to follow.



View in Engine Room on First Floor, Showing 1000-Kw. Engine Generator Units.

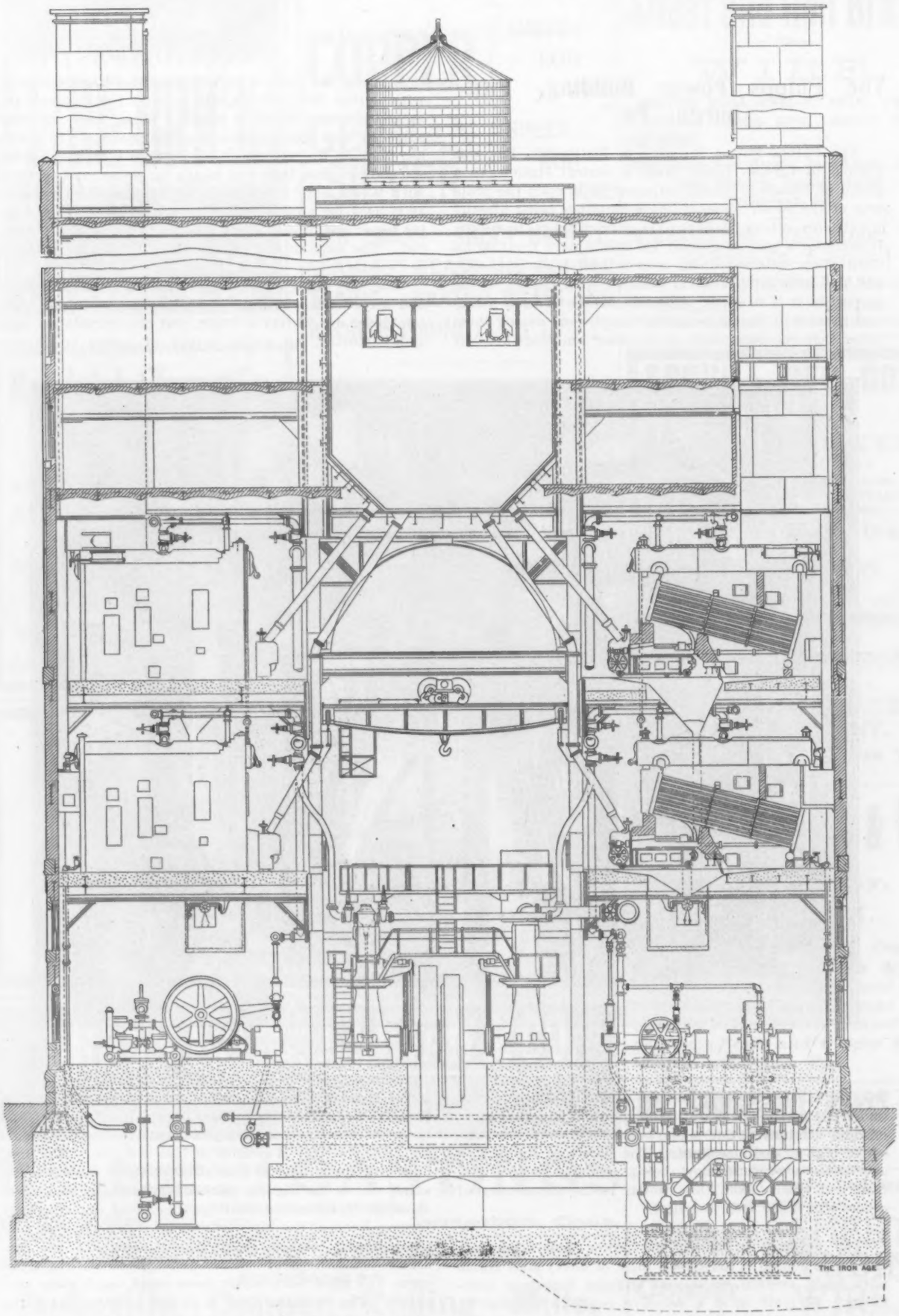
Building.

The building in which the power generating machinery is housed is ten stories high, of heavy steel frame with brick curtain walls and Indiana limestone trimmings. It rests upon a massive concrete foundation, which is carried down to a bed of gravel. Space is left on the four sides to give light and air, and there are large windows on all sides, which are protected by rolling steel shutters. The machinery and boiler floors are of concrete, between the steel beams and over them, while throughout the rest of the building the steel is covered with hollow fire proofing tile, around the columns and arched between the floor beams. These floors are then surfaced with concrete over the fire proofing. In a similar manner, the roof beams are covered with fire proofing tile and concrete, then with heavy tar paper, and surfaced with Welsh tile. The tile are of hard burned clay, such as is used for vitrified sewer pipe, and are laid upon the tar paper with flush joints filled with water proof material. The slope of the roof is about ¼ inch per foot, to shed water.

The first three stories are 24 feet from floor to floor, and are occupied entirely by boilers and machinery; the remainder are 13 feet in hight, and are suitable for light manufacturing, an ample supply of power in various forms being available. There are two passenger elevators, each of a capacity of 3000 pounds live load, and one large freight elevator of 10,000 pounds live load capacity. The stairway is entirely of iron and steel. The first, or engine room, floor is nearly 6 feet above the sidewalk, safely above the highest recorded flood stage, making it about 33 feet 6 inches above pool stage of the Allegheny River. Even at the highest level no water can flow into the basement, and as an additional safeguard, the generator foundations are so constructed that if the basement was filled with water none could reach these machines. The basement floor is 20 feet 6 inches below the engine room floor, and is formed of 4 feet of concrete over the entire surface placed directly upon the gravel. From this base rise the outer walls carrying the exterior columns, and in the center a mass of concrete, forming foundations for the large engines and heavy interior columns supporting the coal bin and the boiler and manufacturing floors. This foundation is continuous from the front to

* Abstract of a paper read before the Engineers' Society of Western Pennsylvania, September, 1904, by Gerald E. Flanagan.

the back wall, and is pierced both lengthwise and transversely with large tunnels, permitting free communication and serving as conduits for piping. The flooring over these side basements is constructed entirely free from the frame work of the building, and consists of 24-inch 100-pound I-beams, spaced about 3 feet 3 inches between centers, filled in with concrete and covered with 24 inches of the same, making a floor 4 feet in thickness. On the side under the elevator pumps this depth is increased to 5 feet, to avoid vibration due to the pumps. The second and third floors extend only along the sides of the building of sufficient width to carry the boilers, and are con-



Sectional Elevation through the Power Plant.

nected by galleries at each end. The center space is thus left open to the bottom of the coal bin, which occupies the center of the fourth and fifth floors.

Arrangement of Machinery.

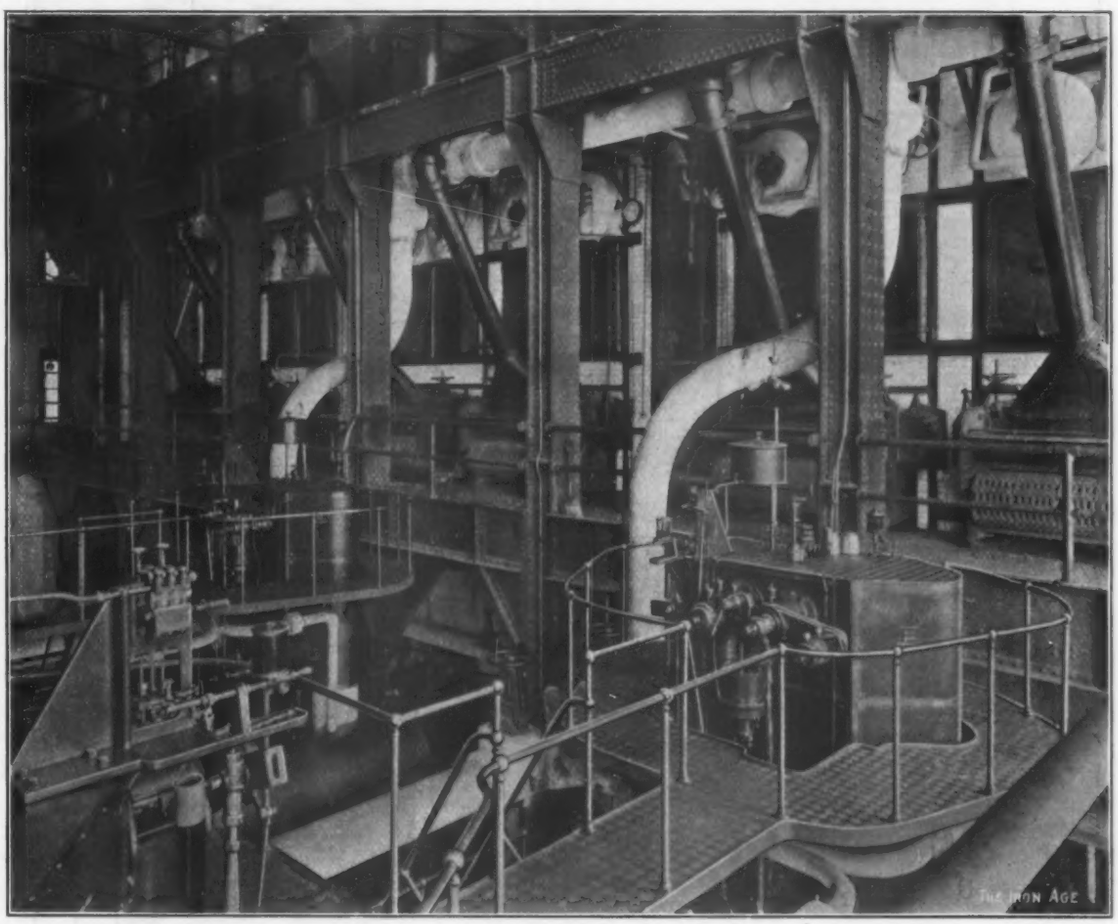
The arrangement of the machinery will be understood by reference to the illustrations. On the first floor, in the center, are the two large engines direct connected to alternating current generators, with room for a third unit. To the left of these are two elevator pressure pumps, also with a place for a third. On the right are located two small engines direct connected to direct current generators which excite the large alternators. In this room is also located the switchboard.

At the rear of this room are the vertical steam pumps, which draw the general water supply from the river, the base of these pumps being 6 feet 6 inches below the basement floor; and beneath this level is a small sump into which all leakage in the basement collects and is pumped into the river. The remainder of the basement is occupied by the two boiler feed pumps, with room for a third; feed water heater, with space for a second one; softening apparatus for feed water, exhaust muffler and grease separator, return water tank and small receivers and pumps for various drains. In the basement on the other side of the building are located the accumulators, a large air tank for cushioning the return line to the elevator pumps, and a pump at the artesian well which supplies the drinking water. In a small intermediate basement in front of the engine foundations are located the filters for the boiler feed purifying system.

On the second floor of the building are located the boilers, and the third floor is arranged so as to be finally used for the same purpose, thus doubling the present capacity. Above the level of the third floor boilers is the coal bin.

Description of Machinery.

The engines are of Westinghouse-Corliss vertical cross compound type with reheating receiver; the cylinders are 28 and 46 x 48 inches. Both the guides and the main bearings are water cooled. The fly wheels are 19 feet in diameter, and weigh about 200,000 pounds each. These engines are direct connected to 1000-kw. three-phase, rotary field, Westinghouse generators. They are 80-pole machines, running at 90 revolutions, giving 7200 alternations per minute. Over the engines and generators is a 25-ton electric traveling crane, built by Pawling & Harnishfeger of Milwaukee, Wis., and there is a sunken way in the engine room floor which permits the entry of wagons at the street level to a point commanded by the crane, thus facilitating the delivery or removal of machinery, &c. When not in use this space is covered by a movable floor. Two 12 x 12 inch Harrisburg engines are direct connected to 60-kw. Westinghouse direct current generators. These are used for exciting the fields of the large alternators, and for other purposes for which direct current may be required. The switchboard, 7 feet 6 inches high and 30 feet 4 inches long, has one panel for direct current, three for the alternating generators and six distributing panels. It is of blue Vermont marble mounted upon an iron frame, and is equipped with improved forms of all instruments necessary for the control of large currents. The lead covered cables from the generators to the switchboard are taken in conduits under the floor.



View of One Side of the Lower Tier of Babcock & Wilcox Boilers and Stokers on the Second Floor.

For elevator service there are two Laidlaw-Dunn-Gordon special elevator pumping engines of the three-cylinder compound horizontal pattern, 21½-inch high pressure cylinder and two 28-inch low pressure cylinders, with reheating receivers; the plungers being 6¼ inches in diameter and the stroke 24 inches long. These machines deliver water against a pressure of 850 pounds, the capacity being 700 gallons per minute. The elevators, both freight and passenger, were built by the Otis Elevator Company, and are high pressure machines, operating with 850 pounds hydraulic pressure. They are supplied with all up to date devices for operating and for safety. The accumulators were also supplied by the Otis Company. They have plungers 12 inches in diameter by 12 feet stroke, and are weighted with cast iron rings, one being

weighted slightly in excess of its mate, which is connected to a chronometer valve on the pressure pump by means of wire rope, so that the motion of the accumulator plunger starts and stops the pump. The second accumulator, being more lightly loaded, will be the first to rise and the last to fall. They are arranged so that if one of them be put out of commission the other may be quickly connected to either of the pumps. These machines have automatic stop valves which throttle the water, and so bring the moving mass of iron quietly to rest at each end of its travel.

Water for all purposes except drinking, including fire service, is supplied by two vertical tandem compound duplex Wilson-Snyder pumps with cylinders 18 and 30 inch, 17¼-inch plungers by 30-inch stroke, which draw water from the Allegheny River and deliver it against a pressure of 150 pounds.

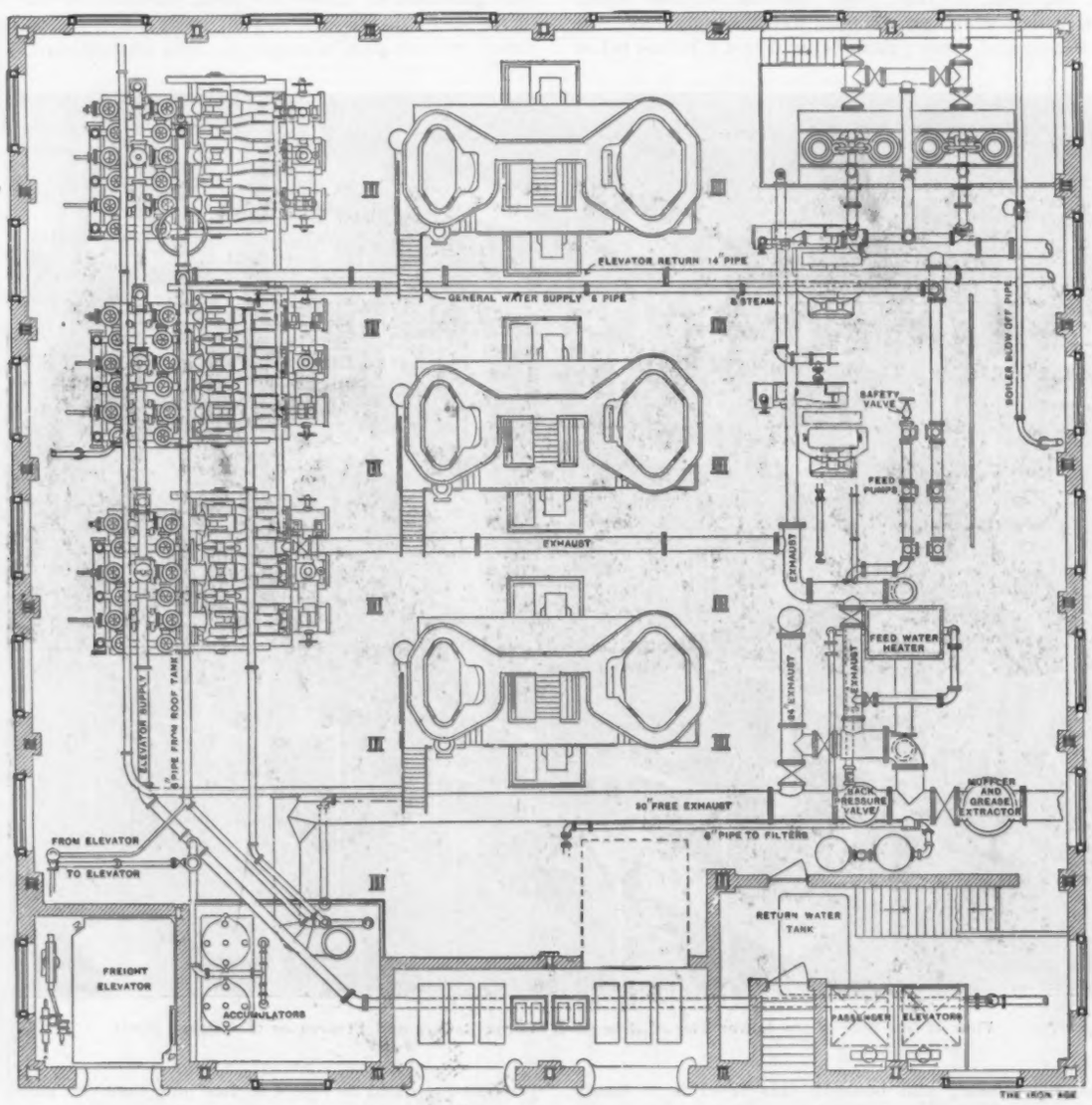
The boiler feed is furnished by two Wilson-Snyder compound duplex pumps with 8 and 14 inch steam cylinders and 7-inch water cylinders by 18-inch stroke.

The Scaife system of treating tanks and filters is used for purifying the water before it enters the boilers. This apparatus consists of two solution tanks provided with small pumps for forcing the solutions into the two precipitating tanks. The latter are closed, being required to withstand a pressure of 200 pounds. Thfough these tanks the water travels very slowly, while the bulk of the impurities settles to the bottom. From here the water goes to the filters, of which there are four, also of the closed tank pattern. The feed water heater is of the closed rectangular pattern, made by the Pittsburgh Heater Company.

In addition to the apparatus above mentioned there are a number of small pumps, one for discharging the water from the basement sump; another for taking the water from an open tank in which the returns from various lines are collected; a receiver and pump which takes all drips from steam separators and high pressure lines; and a small receiver and pump which takes the greasy drips from the feed water heater and the grease separator. There is also an air compressor for supplying air to the cushions on the hydraulic system; and oil filters and pumps for the lubricating system.

Coal is delivered at the two large receiving doors on Cecil alley, and falls through heavy cast iron gratings into hoppers beneath. From there it is raised by two elevators, designed by Heyl & Patterson, Pittsburgh, Pa., to belt conveyors which traverse the entire length of the coal bin. Moving trippers travel the full length of the conveyors and distribute the coal evenly along on both sides. The coal bin is of heavy steel plate stiffened with I-beams, and is lined with cement plaster upon wire netting, the bottom being built into hopper forms for each pipe opening. Pipes, 12 inches in diameter, lead directly to the stokers at the boilers.

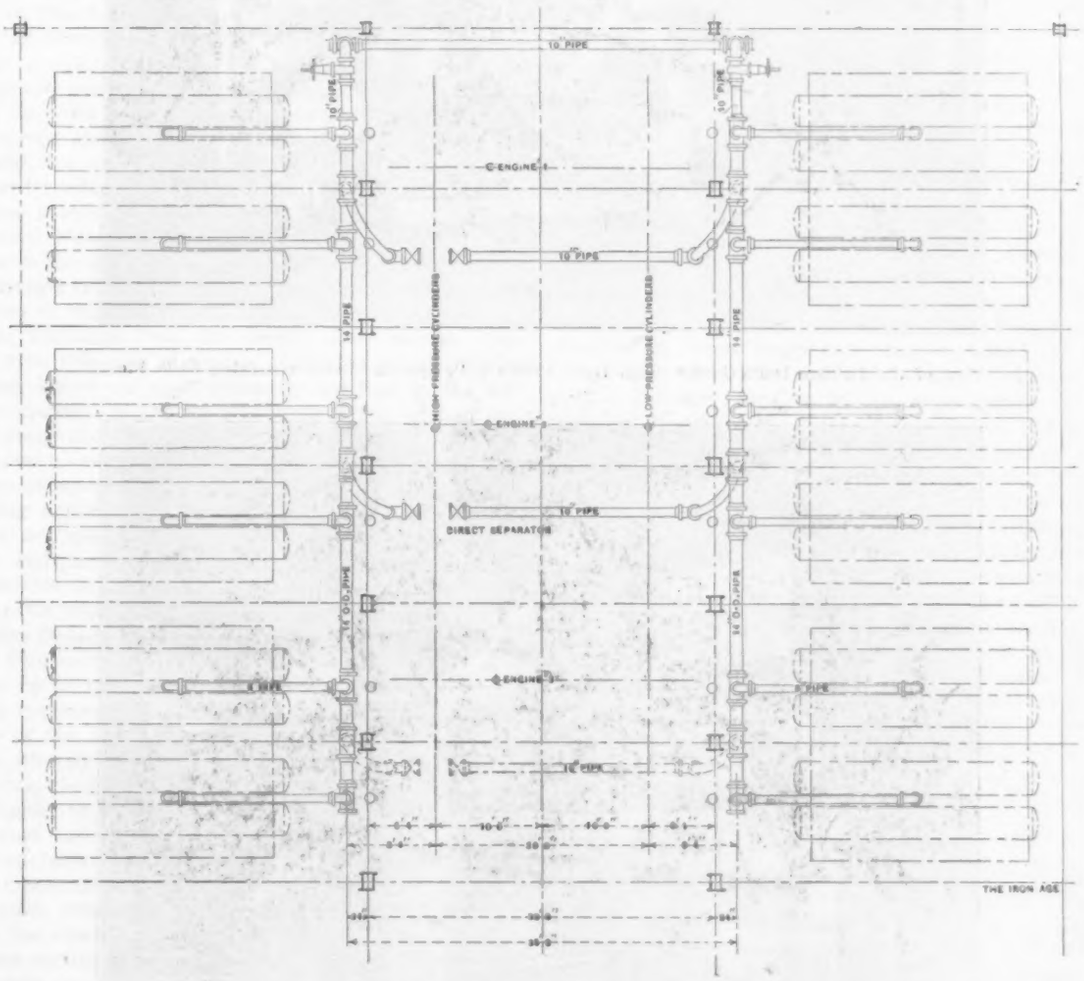
The present installation includes 12 Babcock & Wilcox water tube boilers, aggregating 3600 horse-power. Each boiler contains 140 4-inch by 18-foot water tubes and two 36-inch by 18-foot drums. They are built two in a battery, and are furnished with Babcock & Wilcox chain grate stokers, this construction giving free access to one side of each stoker. The furnace gases discharge directly in the rear of the boilers; those from each boiler into a separate vertical flue provided with a damper



Plan of the Engine Room Floor, Showing the Arrangement of the Machinery and the Most Important Piping.

which swings open of its own weight, and is held in the desired position to check the flow of gases by a chain. The vertical flues are 15 inches by 10 feet, and rise directly to a 4-foot by 10-foot horizontal flue. They have expansion joints about the center of their length. The horizontal flues each have two expansion joints, and are suspended from the girders above in such a manner as to admit of the requisite motion in the direction of their length. They are provided with numerous cleaning doors.

There are two stacks, one for the boilers on each side of the building. The stacks rest upon heavy girders, and are connected with the horizontal flues by short sections containing expansion joints. Each stack is 11 feet in diameter inside, and rises to a hight of 200 feet above the grate bars. It is built of ⅝-inch steel plates, except the bottom ring and the rings where it is stayed to the building at the roof, which are ½ inch. There are four substantial brackets at the base which rest upon the steel work of the building, and the top is stiffened by a ring made of two 6 x 6 x ⅞ inch angles, and below this a Z-bar ring for carrying slings for painting. A ladder extends from the roof to the top of the stack. The stacks are not lined. Around the 11-foot stacks are tile wall inclosures 13 feet square, permitting the intervening spaces to serve as ventilating shafts for the engine and boiler floors.



Plan of the Boiler Room Floors and the Live Steam Mains.

The Piping System.

The piping system is never the least important part of a power plant, and in this instance it really constitutes itself a leading feature.

Water Supply and Boiler Feed.—On the bank of the Allegheny River is a massive concrete block which forms the intake for the water supply, and from this point two 16-inch cast iron bell and spigot pipes lead to the supply pumps in the power building. The screens are formed of angle bar frames with bronze wire netting, and are dropped into slots formed in the concrete. In front of the screens is a grating made of round wrought iron bars 2½ inches in diameter; these are dropped into sockets in massive cast iron beams and may be removed singly.

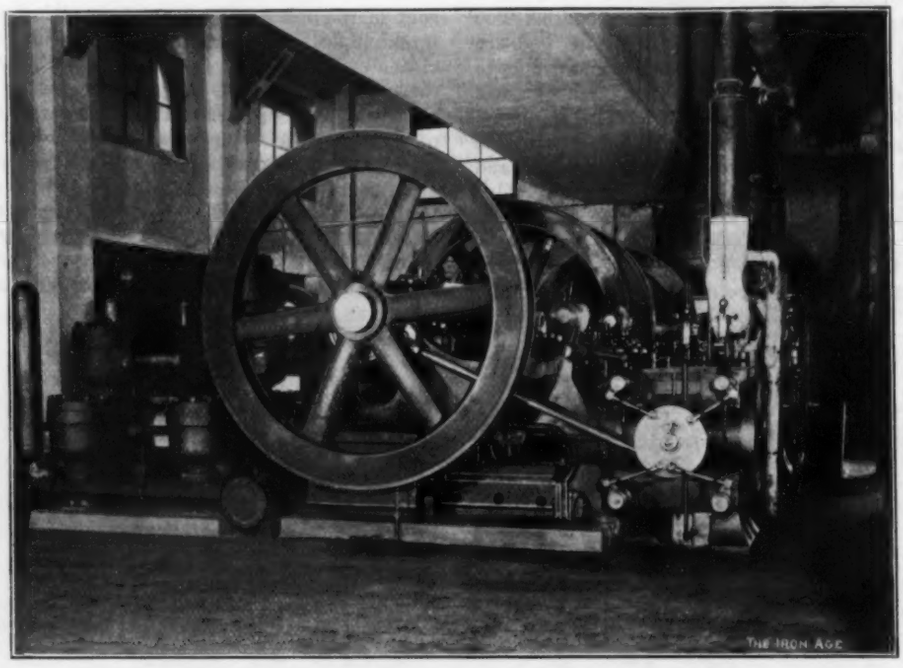
At the supply pumps the system of valves is such that each of the pumps may draw from either, or both, of the intake pipes, and also that the pumps may discharge into either of the intake pipes while drawing water through the other one, for the purpose of blowing out any sediment which may collect in them. From the discharge side of the pumps a 16-inch main leads to the various properties, a 6-inch branch being taken off to supply the general needs of the power building, while a 10-inch line leads to the boiler feed pumps. From the feed pumps an 8-inch line leads to the feed water heater, and from there a 6-inch line takes the hot water to the purifying system, and then reaches the boilers through various smaller branches. Valves are arranged so as to by-pass the heater, treating tanks and any one or all of the filters, so that the plant is operative with these devices entirely out of commission. The feed water mains are of wrought iron, and the smaller branches at the boilers are of brass. Near the feed water heater is a nickel seated water relief valve set at 220 pounds.

Steam Pipes.—Steam from the boilers is collected in 14-inch headers on either side of the building, and these are connected at one end. From both headers 10-inch lines lead to the separators at each of the large engines, so that each engine may draw steam from any or all of the boilers.

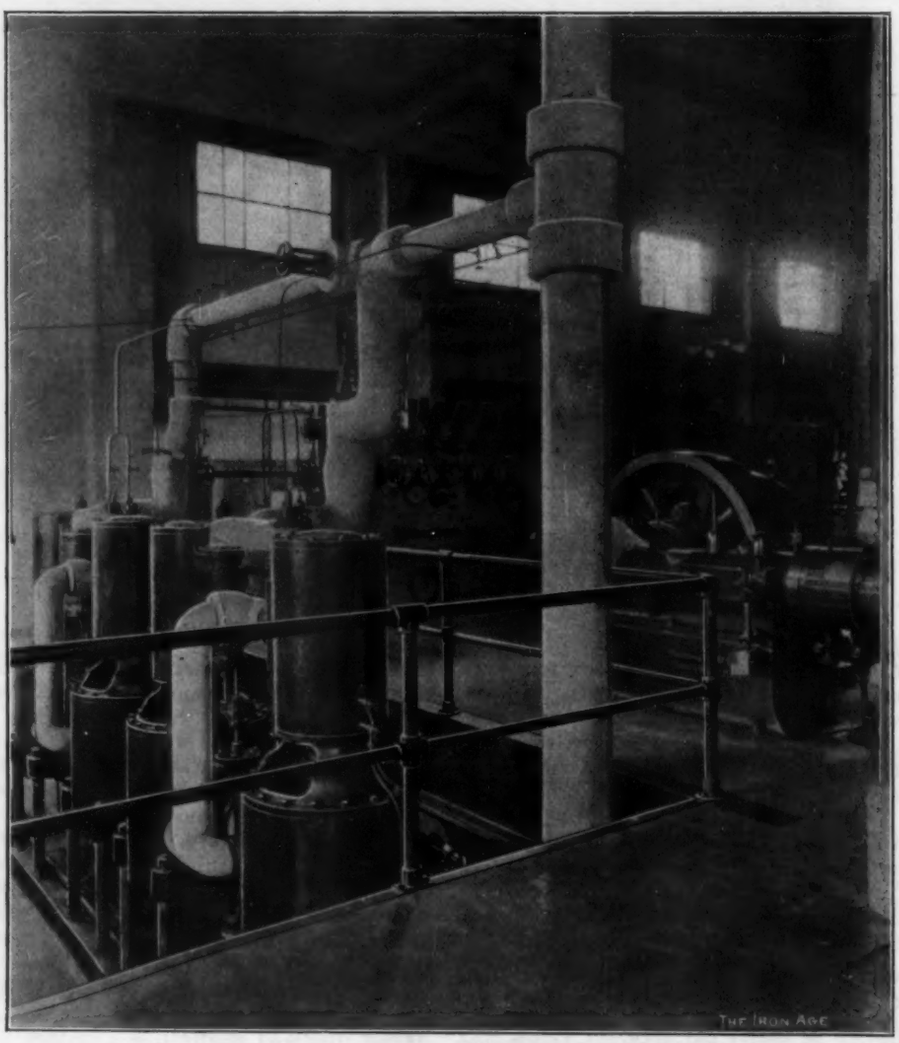
Exhaust Steam Pipes.—Exhaust steam leaves these engines through 18-inch pipes, which are collected into a 24-inch line and finally into a 30-inch main and riser, which terminates in a large exhaust head above the roof. Since exhaust steam is to be used for heating a 30-inch back pressure valve is located in the horizontal main; and behind this valve are collected branch lines from all the steam using machinery, but arranged in such a way

that while the smaller machinery is working under back pressure the main engines may exhaust freely to the atmosphere, and by operating the proper valves the exhaust from these engines may also be forced into the steam heating mains.

Waste Steam.—The steam wasted through the safety valves is collected into two 8-inch mains, which, in turn, discharge into the 30-inch riser. The branches enter these mains at an angle of 45 degrees to permit an easy flow of steam.



View of the Laidlaw-Dunn-Gordon High Duty Pressure Pumps for Elevator Service, First Floor.



View Showing Switchboard, an Exciter Set and the Wilson-Snyder Vertical Duplex Pumps for the General Water Supply.

Boiler Blow Offs.—From the boilers on each side of the building the blow offs collect into short 4-inch mains, and these, in turn, join and form two 5-inch lines which discharge into a private sewer.

Hydraulic Lines.—The elevator pressure pumps discharge into 8-inch pipes, and these lead into a 10-inch main from which branches are taken to the pressure side of the machines. A 6-inch branch is also taken to the accumulators, and on this branch is located a large air chamber fitted with a valve to prevent the air from escaping should the pressure in the line fail. The return water from the elevator cylinders comes back to the power building through a 14-inch bell and spigot pipe and goes directly to the suction side of the pumps, the portion of the line within the building being of galvanized steel pipe. There is a large air tank on this line to cushion the shock of the moving body of water. A 6-inch branch leads to a wooden tank above the roof of the power building, which acts as a reservoir. Its altitude is sufficient to maintain a pressure of about 75 pounds against which the machines must discharge, the object being to guard against the possibility of the cylinders emptying themselves, as they are placed vertically and contain a column of water of greater hight than the atmosphere would support. The large operating valves of the elevators are moved by cylinders operated by small pilot valves, and these small valves take water from the 75-pound line and discharge it at atmospheric pressure. This water returns to the open tank and is saved, as it has been previously treated and filtered.

Return Water Lines.—A small amount of live steam is used in the office buildings for heating water, and the condensation from this is returned to the open tank, as is also that of the exhaust steam from the heating system and the discharge from the elevator pilot valves. The water from this tank is pumped through a 4-inch pipe to the tank above the roof, replacing the loss in the hydraulic system. When the roof tank is full a float operated stop valve closes, and the pressure rises sufficiently to open a check valve in a branch line leading to the feed water system, entering it behind the heating and purifying apparatus. The clean drips from steam separators, &c., are pumped directly into the feed pump discharge, and the oily drips from the grease separator and condensation in the feed water heater are pumped into the elevator pump suction line.

Piping Details.—All valves and pipe fittings of a given size in this building are interchangeable, from the smallest size up to 14 inches, this being the largest size used for any purpose other than exhaust steam, with the exception of the high pressure hydraulic lines and a few fittings directly connected to the main supply pumps. Aside from the hydraulic lines, all valves and fittings are plain faced, the flanges above 6 inches being rolled steel, the fittings cast iron. All flanges and fittings have machined surfaces for bolt heads and nuts, and the under sides of bolt heads and nuts are faced. The bolts are made from refined wrought iron. All bolt holes are drilled, the number of holes being four in the small sizes and some multiple of four for the larger ones. The cast iron flanges are threaded in the usual way, and the rolled steel ones have grooves into which the pipe is peened. The pipe hangers are entirely of forged steel, and are provided with turn buckles for adjusting the length.

The flanges and fittings on the hydraulic lines are of a type especially designed for this plant. The flanges are screwed to the pipe, and are then turned in the lathe so as to leave the pipe and a portion of the flange immediately surrounding it projecting a considerable distance from the face. This projecting portion is slightly curved on its face, the highest part occurring on the pipe itself, and between these pipe ends the heavy copper gasket is compressed. It will be seen that there are no male and female joints in this system; all flanges of a given size are alike, a corresponding projection being formed upon the fitting. All the fittings are steel castings, the flanges being of forged steel. The elbows are of long sweep pattern, and the tees are strengthened with heavy ribs. In order that the gasket may center itself readily, its outside diameter is made equal to the inside diameter of the bolt circle. A few of the bolts are put in place and the gasket slipped in between the flanges; the remainder of the bolts are then inserted and the joint tightened.

The power building being supplied with coal returns power in various forms, such as electric current, alternating and direct; steam at 150 pounds, or any lower pressure; water at 150 pounds, or at 350, and compressed air. At present these lines are taken through an underground conduit to the Bessemer Building. In the future, the ground through which this conduit runs will be covered with tall buildings, and the pipes will then appear in the basement of one or more of them, being already provided with branches from which lines may be taken to supply the buildings through which they pass.

The engineering and architectural designing of the Phipps Power Building, as well as the superintendence of construction throughout, was in charge of Julian Kennedy, engineer, Pittsburgh, Pa.

Philadelphia Foundrymen's Association.

The regular one hundred and thirty-seventh meeting of the Philadelphia Foundrymen's Association was held at the Manufacturers' Club, in that city, Wednesday evening, September 7. It was the first held since the summer vacation and was quite largely attended. In the absence of the presiding officers, Dr. Elmer E. Brown called the meeting to order, J. S. Hibbs acting as secretary *pro tem.* The various standing committees not having been in session during the summer, had no report to make. The treasurer reported a balance in the treasury of $1836.59, with all indebtedness paid. After routine business had been transacted Charles H. Thomas, president, and F. C. Everett, secretary, of the Associated Foundry Foremen, a branch of the American Foundrymen's Association, were introduced, and explained to those present the aims, endeavors and benefits of the membership to foundry foremen in the organization. It was proposed to organize a local branch, and to aid in this movement a motion was passed directing the chair to appoint a committee of three to aid in this work. The following committee was appointed: G. Williams, Adam Pugh and G. M. Beckert. A later motion instructed the secretary of the association to make the call for the first meeting, and that the various foundrymen be particularly requested to have their foremen attend this meeting.

The paper before the association at this meeting was entitled "Mechanically Made Cores," by Geo. H. Wadsworth, Cuyahoga Falls, Ohio. After the reading of the paper a practical demonstration of the 6-inch core machine, electrically driven, was made, and the method of operation, shape, condition, &c., of the core were shown, as was also all the various parts of the machine for making cores of all sizes, round, square or of prismatic shapes.

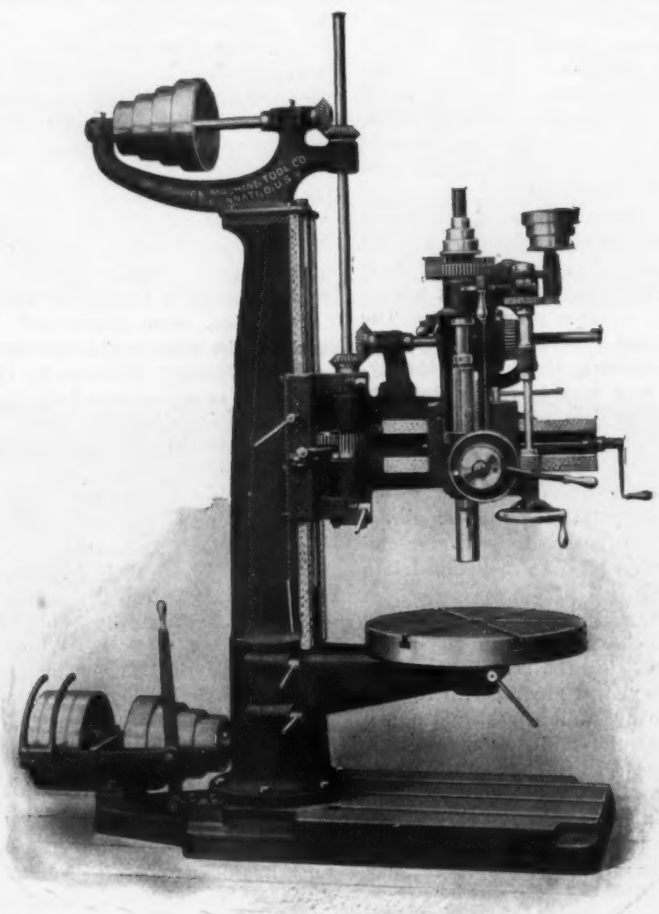
Pittsburgh Reduction Company.—The Pittsburgh Reduction Company of Pittsburgh, with works at Niagara Falls, N. Y., and New Kensington, Pa., and manufacturer of pure aluminum, intends to install mills at the New Kensington works for the rolling of aluminum sheets. A contract has been placed with the A. Garrison Foundry Company of Pittsburgh for the building of three 28-inch plate mills.

The average cost of moving freight in various countries has recently been stated to be: Great Britain, $2.30 per 100 ton-miles; Austria, $2.05; France, $2; Germany, $1.88; Russia, $1.75; the United States, 72 cents. These figures place the American railroads so far in advance of their European counterparts that "there is no second." The London & Northwestern is one of the best operated of the English roads, and here the cost is placed at $1.49, the average trainload being 72 tons. With an average trainload of 387 tons, the New York Central exhibits a cost of 41.5 cents, while the Pennsylvania, with 518 tons, operates at a cost of 40 cents.

The High Speed Steel Test.—The high speed steel test which was to have taken place September 10 at the World's Fair has been postponed for a short time, owing to the fact that some of the foreign manufacturers could not get their steel to America in time. Assurances are given, however, that the test will be made at an early date.

The New Two-Foot Arm National Radial Drill.

A new radial drill has been brought out by the Fosdick Machine Tool Company, Cincinnati, Ohio. The accompanying half-tone shows it equipped with a tapping attachment. These machines have been designed to cover a field of work between that requiring a large radial drill and that requiring an ordinary upright drill. The aim was to combine in one machine the advantages of both types. The back gears and tapping attachment are located on the head, the latter being operated by a lever within convenient reach of the operator, which may also be used for starting and stopping or reversing the machine. The arm swings on ball bearings and is raised or lowered by power. The head is moved along the arm by screw and nut and is provided with a clamping device. The machines are provided with eight changes of speed and three changes of feed in geometrical progression and are furnished with or without tapping attachments, as desired.



THE FOSDICK NEW TWO-FOOT ARM NATIONAL RADIAL DRILL.

The machine will drill to the center of a 48-inch circle. It is capable of drilling a 2¼-inch hole through solid cast iron, a 2-inch hole through solid steel and will force a 2-inch tap through cast iron. The spindle is bored to fit a No. 4 Morse taper and has a traverse of 12 inches. The minimum distance between the column and spindle is 10½ inches and the maximum distance between the spindle and base plate is 48¾ inches. The traverse on the saddle of the column is 30 inches and the traverse on the head of the arm is 14½ inches. The total hight of the machine is 90 inches, and with the spindle in its highest position 97¼ inches. The driving pulleys are intended to run at a speed of 250 revolutions per minute. The floor space occupied is 6 feet 6 inches by 6 feet 8 inches, and the total weight 2400 pounds.

One of the two large traveling cranes at the Government coaling station at East Lamoine, Maine, was blown down in a recent gale. The crane started from its fastenings at one end and was carried along by the wind until it met an obstruction, which caused it to topple over onto the roof of a coal shed. It is stated that the cost of repairs will be considerable.

Co-operation of Employees Desired.

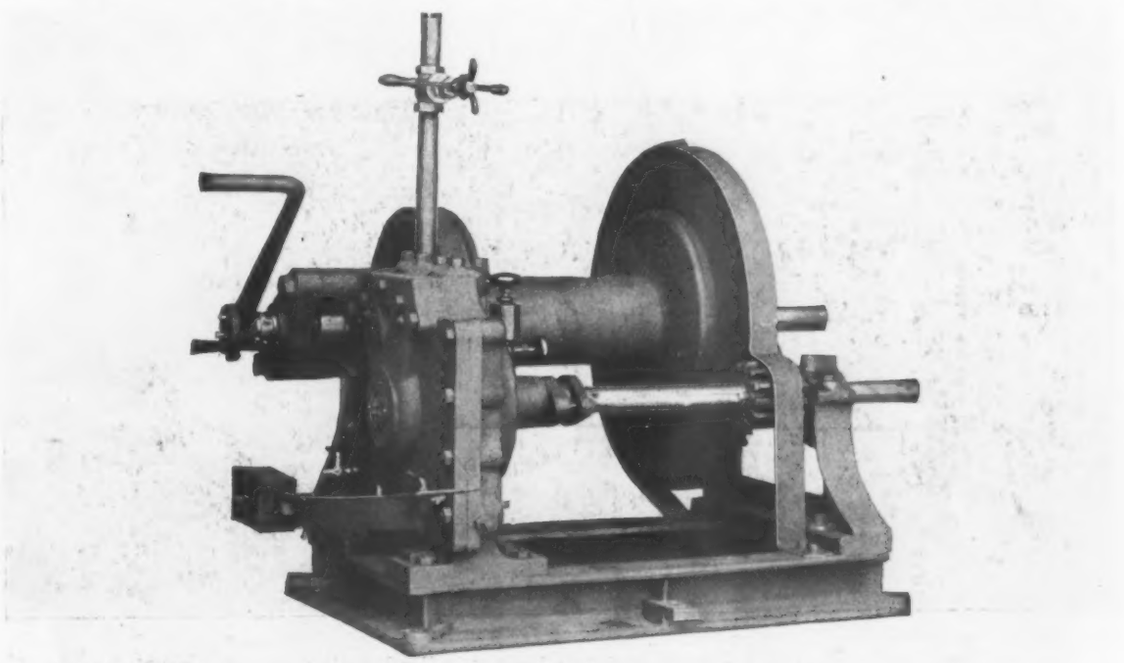
Within the last few years there has been a growing tendency on the part of manufacturing companies to enlist the efforts of their employees in bringing out new ideas as to better methods of manufacture, new uses for products made and any other suggestions that would be beneficial to the employees. Recently the Nernst Lamp Company of Pittsburgh made practical use of a number of suggestions submitted by employees, for which remuneration was made. The American Sheet & Tin Plate Company has actively taken up this matter of securing co-operation of employees for mutual advantage, and recently posted notices at the Laughlin tin plate works, at Martin's Ferry, and the Aetna-Standard sheet mills, also at Martin's Ferry, Ohio, as follows:

"For the purpose of stimulating the use of our various products of both the sheet and tin mills by developing new purposes to which they may be advantageously put, we desire the co-operation and assistance of yourself and all subordinates, including the workmen in your mills. We feel that with the assistance of this vast amount of intelligence we may reasonably expect results that will largely increase our tonnage.

"We would like to have it understood that any one offering suggestions which are developed so as to increase the consumption of our products will be properly compensated after such development shall have taken place. It will also be an opportune time to have our workmen understand that we stand by willing and ready to properly compensate them for any method or device they may suggest or design that will reduce our cost of manufacture."

The Dake Motor for Foundry Service.

The Dake square piston engine, built by the Holland Company of Chicago, Ill., is a compact motor, which may be operated by compressed air or steam. It is built in sizes of from 1 to 20 horse-power in a form that is peculiarly adapted to the direct driving of blowers, pumps, hoists and machinery of almost any class, and for this reason is useful for many purposes in foundries. The accompanying illustration shows the motor applied to a drum friction hoist, a shape in which it may be used for raising a large weight for casting smashing and for raising charging lifts or other hoisting machinery. It runs equally well upside down or in a vertical position. Other special services to which the motor may be put in the foundry are the operation of jib or traveling cranes for the handling of flasks and castings, or the raising, lowering and pouring of ladles. It is easily capable of running a crane that requires several men to operate it by hand power and will raise the load in about one-fifth of the time. One of these motors may be applied to any ordinary hand crane simply by removing the cranks and without changing the gearing in any way. Being completely inclosed in an air tight case, it is well protected from the fine dust and dirt that invariably prevails in foundries. In the outfit illustrated a friction lever and foot brake are provided. The lever is shown in the position for lowering the load. In the opposite position, 45 degrees over, it starts the drum for hoisting and in the central, or neutral, position the drum is fixed and the load held stationary. A similar equipment is made with a tight drum instead of a friction drum and a reversible engine is used, so that power is used for both hoisting and lowering.



A DAKE SQUARE PISTON ENGINE DIRECT CONNECTED TO A FRICTION DRUM HOIST.

The coal consumption of the Moulineaux power station in Paris has been made the subject of recent tests, the result of which shows a total consumption for all purposes, including all auxiliary apparatus, of 2.2 pounds per kilowatt hour. There are nine units, each of a capacity of 800 kilowatts, of which six are operated by triple expansion four cylinder engines, and the remaining three by cross-compound engines. The boiler plant contains nine batteries of Meunier boilers, each battery comprising three units.

The R. D. Cole Mfg. Company, Newnan, Ga., is celebrating its semicentennial this year. The company makes engines, boilers and structural steel work, and has the largest plant of the kind in the South. It was established in 1854 by R. D. Cole, a carpenter and cabinet maker, who with his brother, Matthew Cole, is still at the head of the business.

Electric Cranes in a Basic Bessemer Plant.

In a new basic Bessemer works recently erected by the Chatillon-Commentry Company at Neuves Maisons, France, the entire manipulation of the ladle, both for charging and casting, is effected by overhead traversing cranes worked by electric motors. The shop is planned to contain four 18-ton converters and two gas heated mixers, each of 220 tons capacity, but only three of the former and one of the latter are at present in use. They are all placed with their axes in one line, about 70 m. long, with the mixer at one end. The crane which runs parallel to this line, upon overhead rails, carried upon pillars about 40 feet high, has a span of 15 m., with a maximum lifting power of 35 tons, which can be lifted 6 m., moved sideways 10 m., and longitudinally through the entire length of the shop; the working speeds under the maximum load being 3, 20 and 80 m. for the different movements, respectively. The ladle is suspended by trunnions resting in open hooks at the ends of a pair of screwed rods, which can be raised or lowered by a reversible motor with worm wheel gearing on the traversing platform. The tipping is done by two similar rods, which bear against stops on the outside of the ladle. The metal from the blast furnace, brought by a steam locomotive upon an elevated railway, about half the hight of the shop, is lifted by the crane to the receiving mouth of the mixer and poured in; the same ladle also takes the charge for the converters. The finished steel is taken by another ladle to the ingot molds, which are mounted on cars on a transverse line at the opposite end of the building, the same crane being used. This, however, is only a temporary arrangement, as a second crane, in course of erection, is to be provided for handling the finished steel, the first being reserved entirely for the mixer and charging the converters. The crane driving station is upon a platform suspended from one of the main girders which carries the starting and reversing gear for the four different movements, as well as the switch board. Direct current at 500 volts is used with series motors capable of bearing a considerable overload; the transmission is partly by leathered gearing with raw hide pinions, and partly by leather belts with elastic couplings, in order to insulate the electric from the other working parts. The girder work of the crane has been built by Bietrix, Lafiawe & Co. of St. Etienne, and the electrical parts by the Westinghouse Company.

The American Bridge Company's Ambridge Works.

The Eye Bar Shop.

In *The Iron Age* for August 4 we published a description of the great bridge plant of the American Bridge Company at Ambridge, Pa., particular attention being given to the design and equipment of the main bridge shop. We now take pleasure in laying before our readers a description of the eye bar shop, in which hydraulic machinery is employed in the production of eye bars up to any size required.

The Building.

The eye bar shop is a steel building 220 x 225 feet, with concrete curtain walls, and has a floor space of about 50,000 square feet. It is especially designed for the handling of the long bars necessary in eye bar work, and is divided into three bays, the middle bay and two side bays. The middle bay is 60 feet wide and is served by a 20-ton electric traveling crane, with 35 feet head room under it. Each of the side bays is 80 feet wide and 20 feet 6 inches in the clear between the floor and the bottom part of the roof trusses. Each of the side bays is served by parallel sets of electric traveling cranes, with 27½-foot span.

The building itself is a steel frame with heavy roof trusses, firmly braced to carry the numerous overhead cranes, and is supported by columns in the side walls and by two columns which are centrally located, one on each side of the middle bay. The walls are of concrete, laid in panels 8 feet high, with numerous sliding doors on all sides. Above the concrete is a continuous belt of sliding windows 10 feet high. The roof of the middle bay is raised 8 feet above the roofs over the side bays, this space being inclosed with sliding windows. Dormers in the roofs over the side bays and skylights in the roof over the middle bay shed additional light. The balance of the siding is corrugated steel.

Half of the building is equipped with especially designed hydraulic machines for forging heavy eye bars (*i. e.*, those above 8 inches wide), while the other half is reserved for a set of lighter machinery, with which eye bars up to 8 inches wide may be forged and handled more speedily. The furnaces and machines are placed in a row along the middle bay in the order in which they are used, so that the process is a progressive one from start to finish. The side bay in use is equipped with the necessary roller tables and skids, but otherwise left clear for the passage of eye bars from one operation to the next. Electricity for the motors and water at a pressure of 800 pounds per square inch are supplied from the power house nearby.

Heating and Upsetting.

The stock is run into the shop on a narrow gauge track, from which it is taken and charged into the furnace by a specially designed charging crane, which runs along the side bay in front of the furnaces and the machines. It consists essentially of an electric traveling crane of 27½-foot span. It is fitted with a lifting beam which is a box girder 41 feet long. This lifting beam forms a runway for three four-wheel trolleys, which carry electro magnets of 2500 pounds lifting power each. The traverse of these trolleys is accomplished by an independent motor connected with the trolleys by an endless rope. Telescopic guides, strongly braced to the bridge, serve to prevent any swaying of the lifting beam due to the traversing of the trolleys. This crane carries stock to and from the furnaces, inserting the ends or withdrawing them by simply traversing the trolleys.

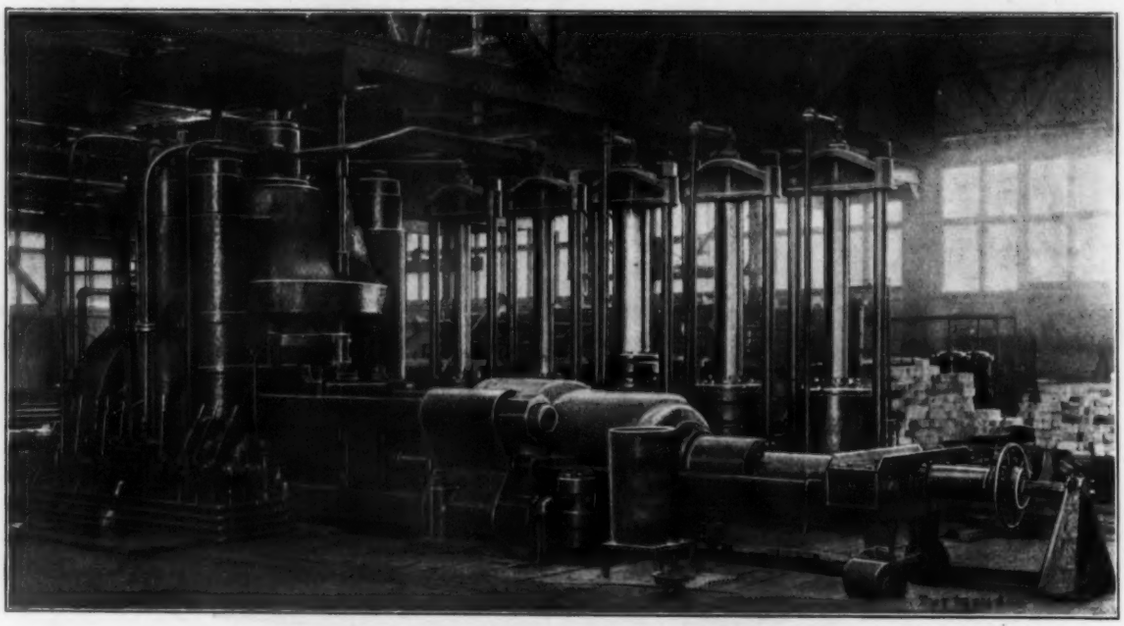


Fig. 1.—The 30 x 44 Inch Upsetter in Eye Bar Shop.

THE AMERICAN BRIDGE COMPANY'S AMBRIDGE WORKS.

After heating, the bars are delivered by the charging crane to the hydraulic upsetter, Fig. 1. The process performed by this machine is the upsetting and forming of the heads, which is accomplished by dies, moved by hydraulic rams. There are three rams, as follows: The upsetting ram, the die closing ram and the hydraulic grip. These rams may be operated at pressures varying from 800 to 7000 pounds per square inch. The higher pressures are obtained by means of intensifiers. The rams are controlled by hand pilot valves, conveniently arranged for the operator. The upsetting cylinder is horizontal, while the die closing and grip cylinders are vertical, being carried by massive housings. The functions of the rams may be inferred from their names; the upsetter moves the dies, thereby forming the head; the die closer prevents the dies and bar from buckling, and the grip prevents the bar from backing out of the machine. The dies are readily changed to accommodate the machine to the varying sizes of eye bars. As mentioned before, this machine is served by power driven roller tables, with reversible rolls, which reduces the handling of the bars to a minimum.

Punching.

After upsetting, the bars are taken by an electric crane to a hydraulic punch, Fig. 2, which punches the

pin hole to a less diameter than the finished hole. This punch is operated under a pressure of 6000 pounds per square inch. Four vertical bolts take all the punching strain.

mounted one above the other, the upper one being adjusted by heavy screws, which are operated by an independent motor. This machine is also served by a roller table. The rolling completes the forging operations of one head, after which the bars are sheared to exact length by a special hydraulic shear. The shear, like most of the other machines, is sreved by a roller table, and is located on the opposite side of the bay, so that the bars may be sheared without turning them end for end. The shear is quite similar to the punch and

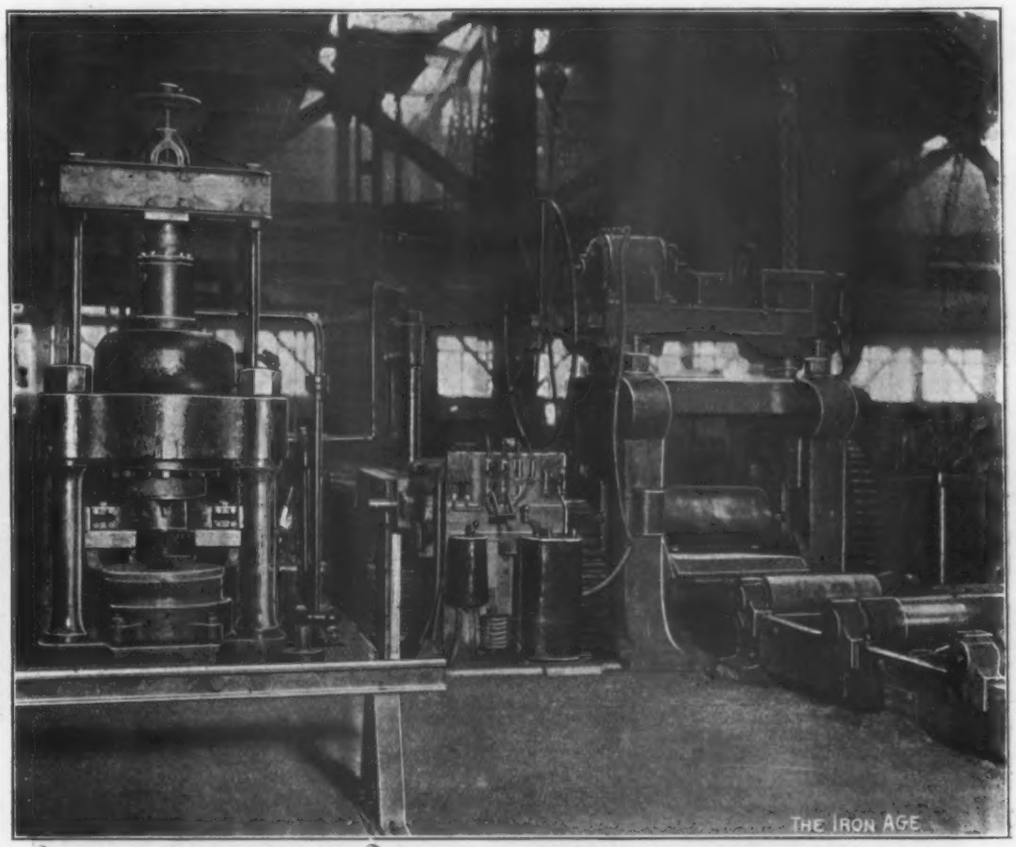


Fig. 2.—Eye Bar Punch and Head Rolls in Eye Bar Shop.

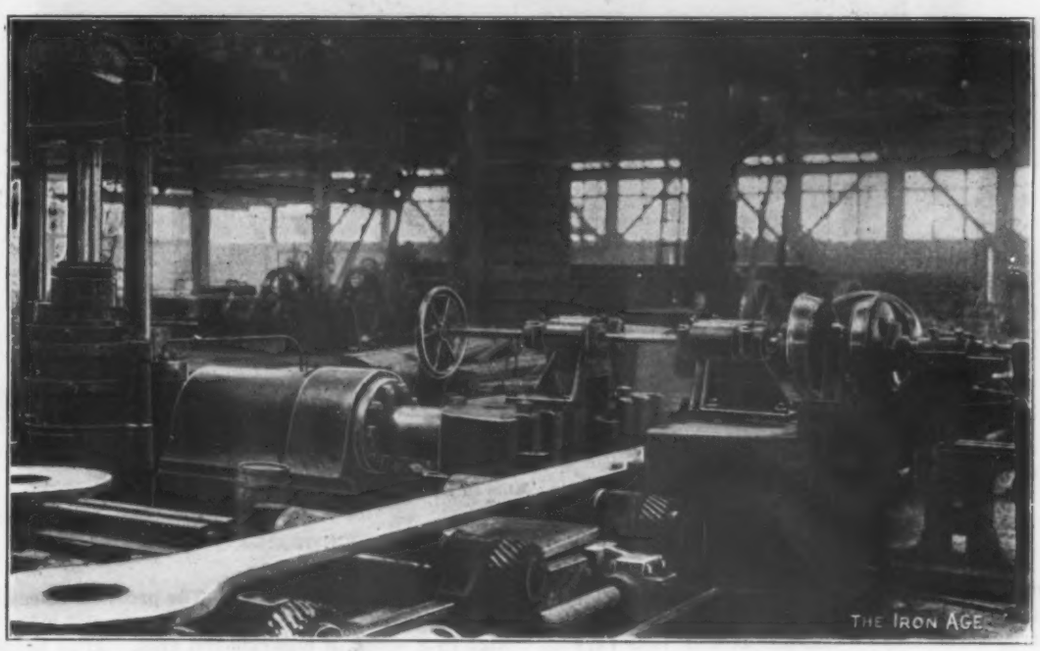


Fig. 3.—The Horizontal Gag Press in Eye Bar Shop.

THE AMERICAN BRIDGE COMPANY'S AMBRIDGE WORKS.

Head Rolling.

From the punch the bars go to the rolls, which is the next machine in the row, also shown in Fig. 2. The head roller is essentially two independent hard steel rolls, which are carried by massive side housings, and independently driven by electric motors. The rolls are

consists of a top and bottom steel casting, the castings being held together by four tension bolts. The top casting carries the hydraulic cylinder and ram which operate the knife.

After shearing, the bars are turned end for end and heads are formed on the other end in the same manner, as just described. With heads forged on each end, the bars are ready to be straightened. The bars to go to a horizontal gag press of special design, Fig. 3. The press has one fixed head and one sliding head, which is operated by a hydraulic ram. The heads have several vertical slots, into which fit different sized gags, and in the middle of each head is a gag held in an inclined slot. The position of the middle gags is controlled by motor driven screws, and may be changed at will, thus varying the bite of the press. The movable head is returned to its open position by a push back ram, located under the bed. Roller tables extend from both sides of the press and are controlled by a man in a pulpit, directly over the bar and in such a position that he can determine if the bar is straight. This man also controls the adjustable gags in the press. One other operator is required to control the rams, which is accomplished by hand pilot valves.

Annealing.

After straightening the bars a crane delivers them to the roller tables, which serve the annealing furnace, shown to the right in Fig. 4. The bars are loaded flatways and charged into the furnace by the power driven rolls, all of which operations consume but a few minutes. This results in a saving of several hours' time over the old method of annealing. The furnace is built of channels, bolted flange to flange, similarly to the heating furnaces. The lining is of fire brick, with fire brick arches forming the top and bottom. The walls are tied together by vertical posts and buck stays. The eye bars are supported in the furnace upon mechanically driven rollers, which are hollow and are cooled by an air blast. The fuel here, as in the heating furnace, is oil, burned in the same kind of special burner. The products of combustion are conducted to a stack 4 feet in diameter by 60 feet high by a series of underground flues. After heating, the bars are allowed to cool in their own atmosphere. It is proposed to build a similar furnace at the other end of the roller table, so that either furnace may be used as a muffle for the other one, thereby making the process a continuous one.

The two furnaces, with the tables between them, will reach across the shop, a distance of 220 feet, and are equally convenient for light or heavy work. By the use of these furnaces not only time is saved, but a very even heat is obtained, so that the bars come out of the muffle practically as straight as they went into the furnace,

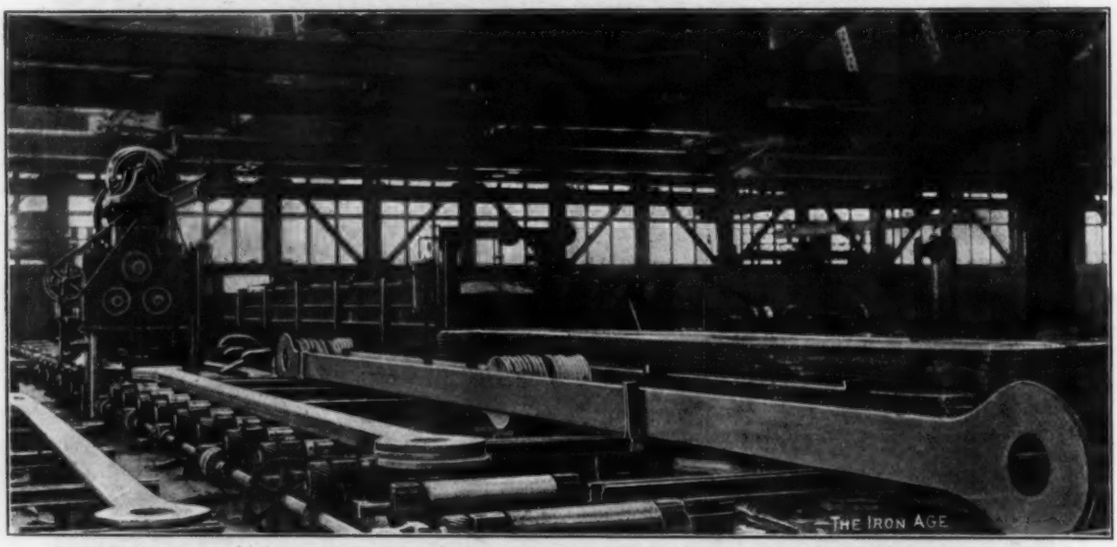


Fig. 4.—The Vertical Gag Press and Annealing Furnace in Eye Bar Shop.

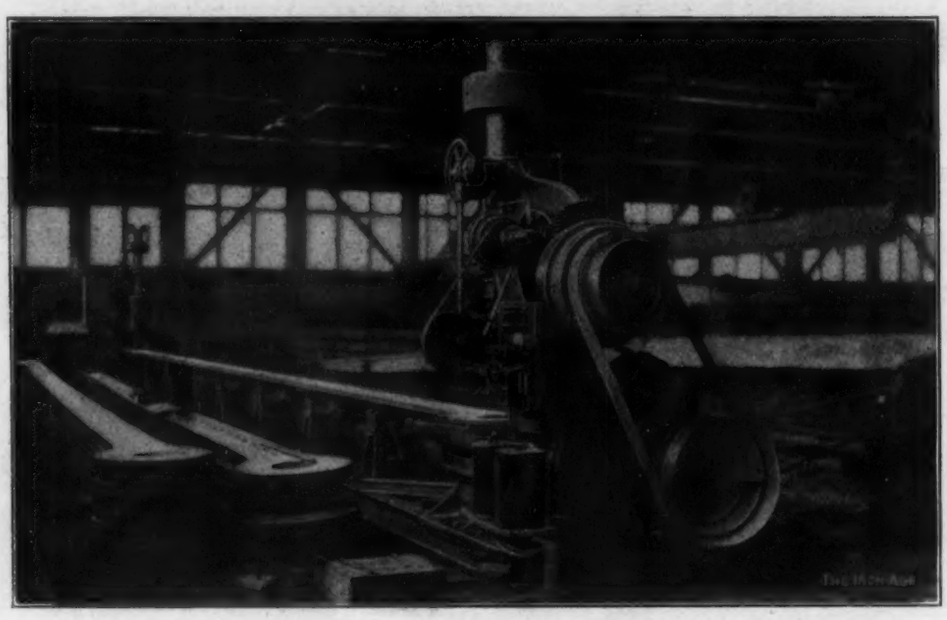


Fig. 5.—The Boring Mills in Eye Bar Shop.

THE AMERICAN BRIDGE COMPANY'S AMBRIDGE WORKS.

thereby saving the expense of restraightening them and also avoiding the injurious results of straightening a badly warped bar. Whatever final straightening is necessary is done on a vertical geared gag press, Fig. 4. The cross head is actuated by an eccentric of 1 inch throw, which is in turn motor driven. The cross head is fitted with dovetailed slots, which hold the different gags. The lower stationary head is in two independently adjustable parts, with a movable gag on a central support between them. The upper head may be adjusted to one side of the machine or the other to accommodate the machine to wide or narrow eye bars, by means of a power driven screw. The lower gags are adjusted by wedges, which are operated by hand screws. This machine is very compact, occupying a small floor space of only 6 feet by 7 feet, and like the horizontal gag press, is operated by two men, similarly stationed.

Boring.

After the eye bars are perfectly straight they are taken by an overhead electric traveling crane to the boring mill, Fig. 5, which is the last machine in the bay. It consists of two independent boring heads, one of which is fixed and one of which is movable on ways about 75 feet long. The boring heads may be set at the required distance apart and the two holes in the bar bored simultaneously. The bars are punched so near to the finished sized hole that the holes are finished at one cut. While the machine is of standard construction, the heads are equipped with special centering chucks, which quickly and accurately locate the bars. When bored the eye bars are completed and an overhead crane loads them on the buggies on an adjacent narrow gauge track. The interesting and instructive features of this eye bar plant are as follows: The special design of the building, as shown in the ground plan, Fig. 6, adapting it to the convenient handling of the long bars; the systematic arrangement of the machines tending toward the same end; the special hydraulic machinery and furnaces, and, last, the efficient crane service, which makes the handling of the heavy bars such an easy matter.

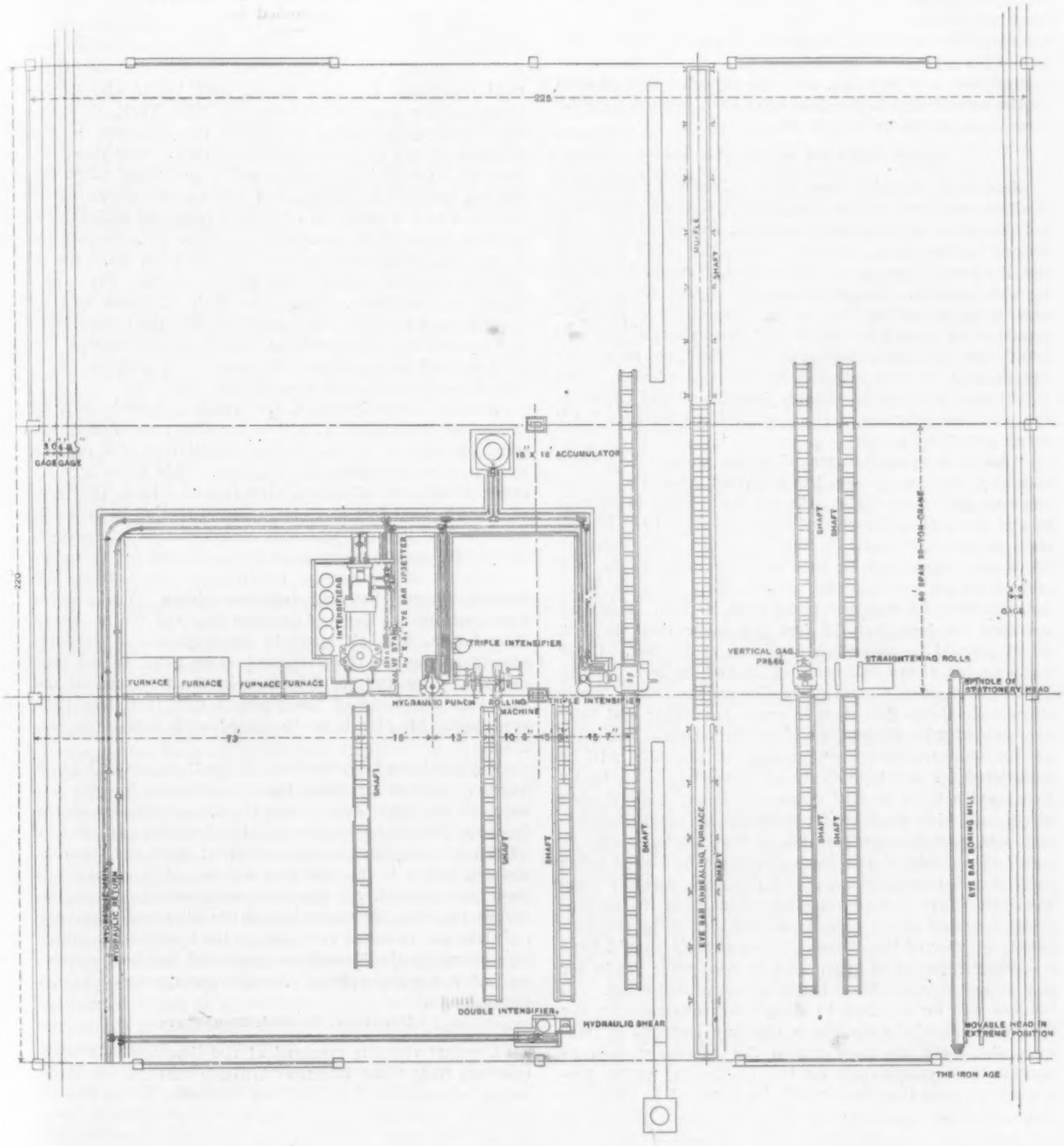


Fig. 6.—Ground Plan of the Eye Bar Shop.

THE AMERICAN BRIDGE COMPANY'S AMBRIDGE WORKS.

Panama Canal Contracts.

WASHINGTON, D. C., September 13, 1904.—The Panama Canal Commissioners, who went to the isthmus about two months ago to inspect the route of the great waterway for the purpose of deciding upon a general plan of work, with special reference to the letting of contracts for excavating, &c., and the purchase of necessary material, have advised the headquarters in this city that they will arrive in New York on the 14th inst. As a result of the survey made by the Commissioners, orders have been given for the purchase of a considerable quantity of tools and material, and it is expected that as soon as the notes taken in the field have been worked up some very large contracts will be let.

Large Order for Steam Shovels.

Secretary Murphy has been advised by Admiral Walker, president of the Commission, that an open market purchase of three steam shovels, one of 70 tons and two of 90 tons each, has been made, the order going to the Bucyrus Company of Milwaukee, through its agent on the isthmus. Eleven additional steam shovels are now being advertised for on a competitive basis, proposals to be opened October 6. Of these shovels, five will be of type "A" and six of type "B," the types representing general designs adopted by the Commission. The two types vary only in weight, dimensions and capacity, the principal features of the specifications for type "A" being as follows:

"As each manufacturer of steam shovels has some specialty, the Commission has prepared general specifications so that competition will not be limited to shovels of any one make. Shovels of this type should not be less than 65, nor more than 75, tons in weight. The capacity of dipper should not be less than 2.5 cubic yards, nor more than 3.5 cubic yards. Hight from point of boom not less than 26 feet nor more than 30 feet. Hight of A-frame not less than 17 feet nor more than 20 feet, which should be arranged to lower to 16 feet. Clear hight of lift above rail between 15 and 20 feet. Width of cut at 8 feet elevation, minimum, 40 feet. These shovels should be first-class in every particular and fully up to standard specifications of similar shovels furnished by the bidder to previous purchasers. No bids will be considered for any type of shovel which has not actually had service tests in stiff clays and heavy blasted rock work. All bids must be accompanied by detailed drawings and manufacturer's standard specifications; also by a list of shovels of the same character furnished other parties and a certified record of the work actually done by them where the shovels have been used in the matrials specified above, signed and certified to by the purchaser or user of the shovel. These shovels should have a loading capacity of from 4000 to 6000 cubic yards per day of ten hours of loose material, above described. All bidders will be required to accept the responsibility for the shipment of the shovels to Culebra, Isthmus of Panama, set them up and furnish the necessary men to operate them successfully for two continuous weeks, during which time the shovels will be required to excavate and load 2500 cubic yards solid measurement per day of ten hours for six consecutive days. These shovels will not be accepted nor paid for by the Commission until this service test has been made to the satisfaction of the chief engineer. The freight charges on these shovels will be arranged for and assumed by the Commission from the ship's side, New York City, to Culebra, Canal Zone. The gauge upon which these shovels are to be used is 5 feet, and the journals, axles and trucks should be so constructed as to admit of afterward pressing the wheels into a 4 foot 8.5 inch gauge, should it be desired to change the gauge at any time. Special attention is called to the proper housing of these shovels. Protection of all men immediately working on the shovels should be provided for. This protection, however, should be as light and open at the sides as possible. The first shovel must be completed and loaded on board cars ready for shipment at the works of the manufacturer within 30 days after acceptance of bid; each succeeding shovel to be completed and loaded on board cars ready for shipment at the point of manufacture not later than November 30, December 31, 1904, and January 31 and February 28, 1905."

The shovels of type "B" must be not less than 90 nor more than 100 tons in weight, and the capacity of dipper must not be less than 4 cubic yards, nor more than 6 cubic yards.

Open Market Purchases.

Acting upon orders from President Walker and Chief Engineer Wallace, Secretary Murphy has authorized Alfred Anderson, purchasing agent for the Panama Railroad Company, 21 State street, New York, who is the Commission's purchasing agent at New York, to make two large open market purchases for shipment to the isthmus at the earliest practicable date. The most important lot will include a complete plumbing outfit for the big hospital at Ancon, and will include about 10,000 feet of 4 and 5 inch soil pipe with complete fittings and a large quantity of plumbers' supplies. The second lot of material includes 300 cases of dynamite, 200 kegs of blasting powder, 20,000 1-gram detonating caps and 60,000 m. of 5-mm. fuse. As both of these lots of material are required for immediate use, the Commission has authorized their purchase without advertisement, but with respect to all future purchases every possible effort will be made to buy on a competive basis.

Another large contract, for which proposals will be opened on September 21, will be for 4300 tons of cast iron pipe, intended to be used in the installation of a modern system of water works for Panama. This order will include 40,000 feet of 6-inch, 6100 feet of 8-inch, 1600 feet of 10-inch, 1500 feet of 12-inch, 53,600 feet of 16-inch and 1400 feet of 20-inch pipe and about 45 tons of specials. Very rigid specifications have been adopted for this pipe on account of the meager facilities on the isthmus for cutting off and banding defective pieces. The general specifications are those of the New England Water Works Association, and all specials are required to conform closely to the specifications and to be fitted to the pipe ordered. The limit of tolerance in the thickness of the metal in the body of the pipes is 0.08 inch less than standard. All pipe is to be coated with coal pitch varnish.

Reports have been received at the Commission's headquarters here to the effect that an Alabama foundry has received an order, direct from the Commissioners on the isthmus, for a large number of side dumping cars, but no official information has been received from the Commissioners, and it is thought that the size of this order has been exaggerated. All the tools and material above referred to, with the exception of the pipe and plumbers' supplies, are intended for work on the Culebra cut, which was begun by the French company and has been carried on under the supervision of engineers appointed by the Commission.

Errors of French Engineers.

A report recently received at the Commission's headquarters from Chief Engineer Wallace contains the interesting information that the maps furnished by the French company have been found to be so full of errors as to be almost valueless. All topographical work covering territory more than a few rods from the axis of the canal has been found to be so defective as to be wholly misleading, while the calculations of the French engineers of the length of the tunneling to be done are found to be more than 2 miles in excess of the actual work. A number of test borings made under the supervision of Mr. Wallace have shown the French records to be worthless, and considerable anxiety has been caused by the discovery that while the French records of borings showed solid rock in certain sections of the canal at a depth of 100 to 125 feet, the borings made by American engineers have developed nothing but sand and clay. Upon making these discoveries Mr. Wallace has designated several parties of engineers to go over all the French maps and records with great care to check up all errors.

W. L. C.

A New Departure in Industrial Education.

Joseph Wharton, the founder of the Wharton School of Finance and Commerce of the University of Pennsylvania, has recently raised the endowment of the school to $500,000, and in consequence of the larger fund of resources, the university has reorganized the school and has established a series of new courses which mark a distinct step forward in the educational policy of our large universities. A large number of specialized business courses are to be offered at the opening of the college year on September 30, with a view to fitting young men directly for their prospective business careers. In the first two years the work includes Economics, Advanced Physical, Economic and Commercial Geography, Money and Credit, Banking, Advanced Accounting, Commercial Law, Industrial Processes and Field Work in Industry, together with English Literature, Modern Languages, electives in Natural Sciences, History and other subjects of university grade.

In the third year the choice of business courses widens. There are now open courses in Industrial Management, which deal with the methods of collection and marketing of raw material, manufacturing and merchandising; Insurance (a general study of the subject); Railway Transportation, in which a knowledge is gained of the railway system and service, of the practice and principles of rate making, of the physical and financial characteristics of the leading railway systems of the United States, for foreign railway practice, and of the legal and business relations between shipper and carrier; Auditing, involving the interpretation of partnership and corporation accounts and reports; Corporation Finance, a study of the methods of promoting, capitalizing and administering business corporations, and Public Finance, a study of taxation and of the activities of public bodies in borrowing and financial administration.

In Transportation, following the general course in the junior year, and also founded upon the preliminary work in commerce, the student is offered courses in the Organization and Operation of the Railway, in Rates and Traffic and in Railroading Accounting. During this year courses are also offered in Fire, Life, Marine and miscellaneous forms of Insurance. A large part of the work of instruction is given by insurance experts by means of lectures on special topics. During the senior year courses are offered in Industrial Management, including manufacturing costs and depreciation, labor management, factory location and equipment, factory organization, advertising and sales; also courses on Banking, including advanced commercial law and the law of bills and notes, commercial and bank credit, bank organization and management, investments, foreign banking systems and domestic and foreign exchange.

The work of the first two years is therefore broader in character in order to offer a foundation for the specialization which is encouraged in the latter half of the course. It is expected that the student will have chosen his prospective occupation by the time that this preliminary work has been completed, and will then be ready to concentrate his studies in the chosen field.

In connection with the courses in Industrial Processes, Industrial Management, Transportation, Banking and Finance, many business institutions are visited and their methods are studied. A large number of business men are called on to assist in the work of instruction by means of special lectures in their respective fields.

The Seamless Tube Company of America.—The Seamless Tube Company of America, organized at Pittsburgh some time since, has let a contract for the erection of its plant at Monessen, Pa., to A. & S. Wilson, contractors of Pittsburgh. The main building will be a steel structure 140 x 600 feet, will contain about 700 tons of steel and will be erected by the McClintic-Marshall Construction Company of Pittsburgh. Hooven, Owens & Rentschler Company, Hamilton, Ohio, was awarded the contract for a 1200 horse-power engine, and the Westinghouse Electric & Mfg. Company will furnish an 800-kw. generator. The machinery for the plant was built in Germany and it is expected to arrive in New York this month. The initial plant will have a capacity of 100 tons per day, but will be laid out for a capacity of 400 tons. Kindl & Glafey are the engineers.

The Wabash Railroad Buys the Pittsburgh Terminal & Coal Company.

Negotiations for the sale of the Pittsburgh Terminal Railroad & Coal Company, with all its properties in Pittsburgh, to the Wabash Railroad were completed last week. The price was not made public, but is said to have been $10,000,000 or $12,000,000. By this purchase the Wabash Railroad becomes a factor of the first class in the freight situation in Pittsburgh. It owns in fee simple about 15,000 acres of the finest Pittsburgh coal, assuring it a coal traffic of 3,000,000 tons annually. It obtains a frontage of ½ mile on the Pittsburgh harbor and 36 miles of terminal railroad having connections with every railroad system entering Pitsbturgh, well equipped with cars and tapping seven mines. It is claimed that the Wabash Company is at once assured of sufficient tonnage to meet the entire interest charges on the Wabash Pittsburgh terminal bonds. For the Pittsburgh Terminal & Coal Company the negotiations were conducted by President Charles Donnelly and ex-Senator William Flinn and F. F. Nicola, directors. For the Wabash the representatives were President Joseph Ramsey, Jr.; President E. T. Jeffrey of the Denver & Rio Grande, a Gould line, and Wilson S. Pierce, the Gould railroad attorney. The properties of the Pittsburgh Terminal Railroad & Coal Company comprise the following: The West Side Belt Railroad Company, extending from the mouth of Saw Mill run, on the Pittsburgh harbor, where it owns ½ mile of frontage, to Clairton, 21 miles; branch to Banksville, 2 miles, connecting with Pittsburgh & Lake Erie, Panhandle, Wabash, Baltimore & Ohio (at Bruce on the Wheeling branch), and the Pittsburgh, Virginia & Charleston line of the Pennsylvania Railroad. The company owns five engines, one passenger car and 1134 modern coal cars, and a tract of 11,060 acres of the highest grade bituminous coal, through the full length of which the West Side Belt runs. In this seven mines are in operation. The fact that the late Selwyn M. Taylor was the engineer who supervised their opening proves the high character of the work. A second tract of 3879 acres of coal in the same vein, 12 miles from Pittsburgh, on the present line of the Wabash-Pittsburgh terminal, is as yet undeveloped. The title to the coal acreage is in fee simple. The company owns also 1000 acres of surface land. Property owned and controlled, with that available, is sufficient for 250 miles of terminal yards, which will give the needed opportunity for a railroad clearing house in the Pittsburgh district. The mine tipples are practically in the terminal yards and are but a few minutes from the center of distribution of empty cars.

The coal property consists of 100,000,000 tons of coal. Of this 90,000,000 tons are Saw Mill Run, Castle Shannon and first and second pool. The capital stock of the railroad company is $1,080,000, the shares having a par value of $50. Of this amount $1,065,000 was secured in 1902, when the Pittsburgh Terminal Railroad & Coal Company was formed. The capital stock of the Pittsburgh Terminal Railroad & Coal Company is $14,000,000. It has a funded debt of $7,000,000, represented by bonds bearing 5 per cent. interest and due July, 1942. The bonds are secured by the company's coal lands, &c., and by the guarantee of the West Side Belt Railroad stock owned. Of the issue $1,000,000 was reserved to retire the West Side Belt's first bonds, including $620,000 held in latter's treasury, only $380,000 having been issued. There is a sinking fund provision of 8 cents on every ton of coal mined. To the Wabash system, rapidly completing its low grade well built Pittsburgh line, the road comes just in time to give it the tonnage needed. Not only will it do that, but it will give easy connections with other large tonnage sections. To reach the Union Railroad, the terminal line of the Carnegie Steel Company, it is necessary to build but a couple of miles.

The No. 1 Walker Grinder.

In grinding face or bevel cutters with a cup emery wheel it is desirable to use a more rapid cross movement than is regularly obtained on a tool grinder. For this reason, on the new No. 1 tool room grinder the Walker Grinder Company of Worcester, Mass., has provided a lever cross feed attachment, which is the first mechanism of the sort to be placed on a machine of this type. The new No. 1 machine is designed for use in shops where the complete No. 2 universal grinder, described in *The Iron Age* of July 28, 1904, is not required, a smaller and cheaper machine being adapted for the ordinary run of milling cutters and reamers. It is distinguished from the No. 2 machine by the lever cross feed, above referred to, for grinding end mills, and in that the wheel head does not swivel in a horizontal plane. The grinder spindle can, however, be used at any angle in a vertical plane without affecting the belt tension. Most of the attachments on the No. 2 machine may be applied to the No. 1 grinder; with the internal and external grinding attachment it can be converted into a rotary grinder. It may also be fitted with the new V center heads, which were described in the previous ar-

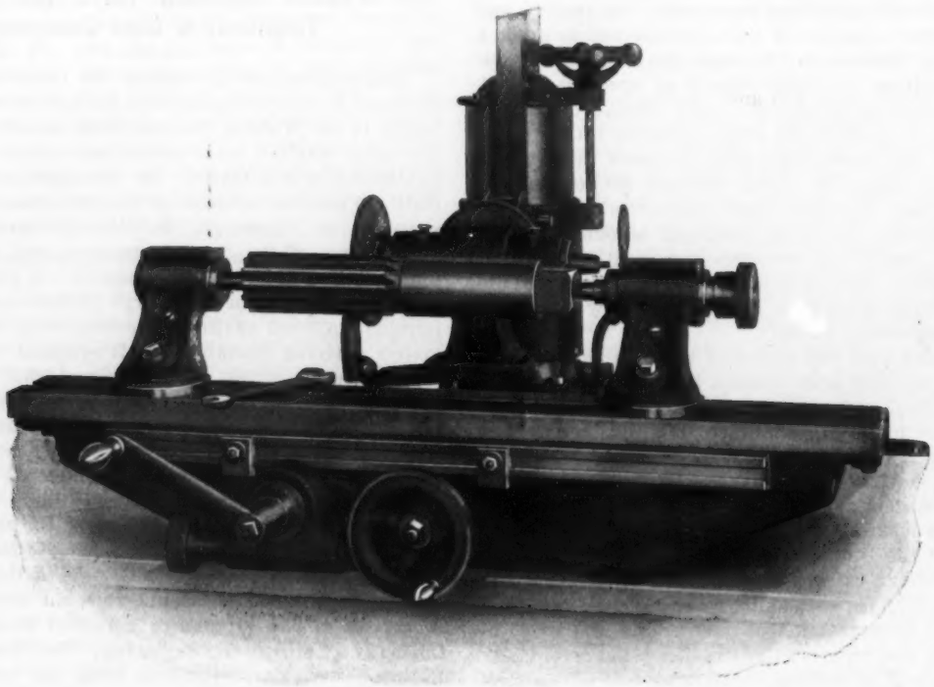


Fig. 1.—Adjusted for Grinding a Reamer or Cutter on Centers.

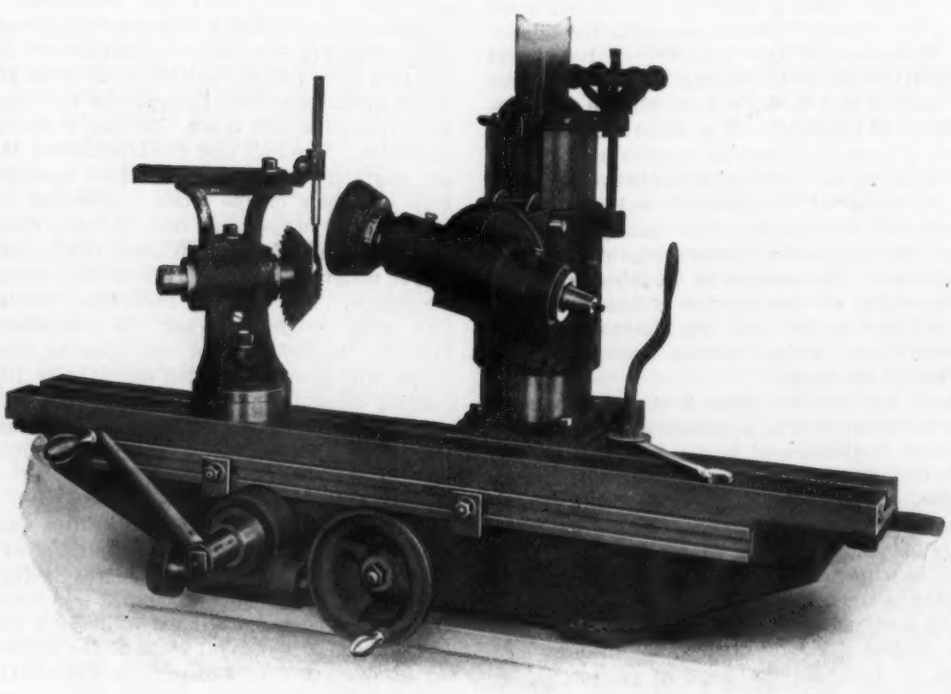


Fig. 2.—Adjusted for Grinding a Beveled Cutter.

THE No. 1 WALKER GRINDER, BENCH PATTERN.

ticle. The machine is furnished either with a base, or without when it is to be placed on a bench. It is shown in the latter form in Figs. 1 and 2.

The cross feed is so arranged that it may be operated in either the usual manner by a screw actuated by the wheel at the front or by the lever shown just to the right of the wheel supporting column. The mechanism of the cross feed is not complicated. Upon referring to Fig. 3 it will be seen that the bed of the grinder is in the shape of a T, the perpendicular to the middle, A, supporting the cross feed mechanism and grinding wheel parts. The cross feed slide B is dovetailed on the bed A. The latter is slotted to allow the passage of the cross feed nut C, used with the regular feed, and the slide B is slotted to straddle the binding screw D. The cross feed lever E is pivoted at its lower extremity and is slotted midway of its length for a pin which is attached to the adjustable link F, while the latter is clamped to the bed A and arranged so that the lever E may always be set in an approximately vertical position. When it is desired to use the lever cross feed it is only necessary to loosen screw D. This screw may also be used as an adjustable stop for the lever cross feed, as it may be set at any desired point in the slot.

The belting arrangement of the grinder spindle on the No. 1 machine is similar to that for the No. 2. The lower idler G is placed inside the vertical column H and

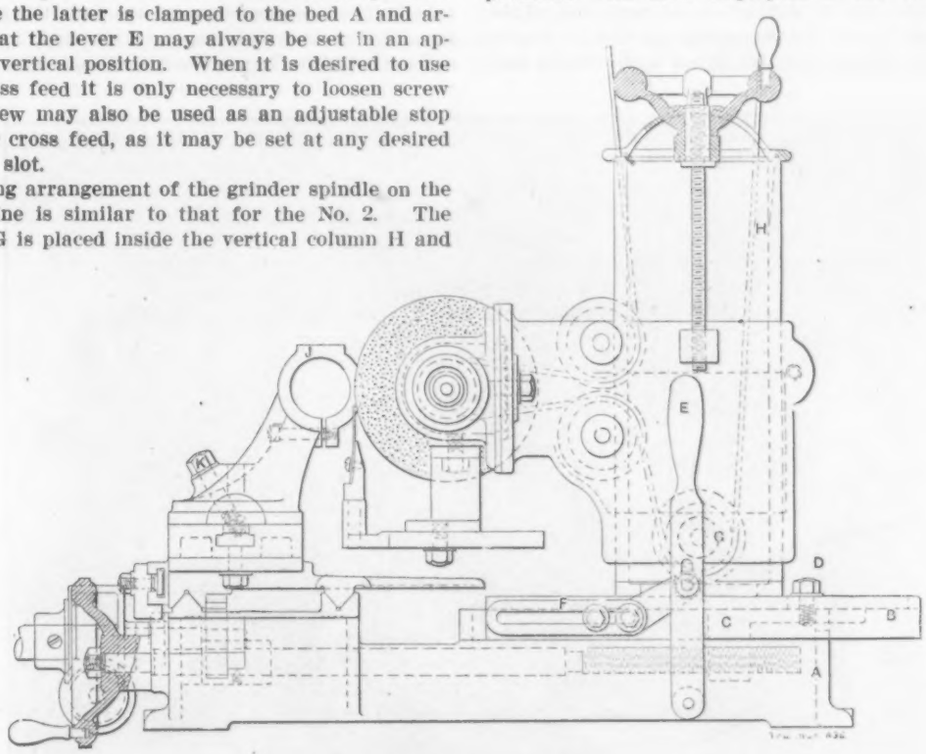


Fig. 3.—End Elevation of the Grinder Set as Shown in Fig. 1.

THE No. 1 WALKER GRINDER.

is stationary with respect to it, so that the wheel slide may be moved up or down without altering the tension of the belt.

The No. 1 grinder, like the No. 2, has a quick longitudinal feed. The platen is operated by rack and pinion through a long detachable operating crank. The pinion shaft also carries a worm wheel meshing with a worm, which may be revolved by means of the knurled knob shown at the left in Figs. 1 and 2. The worm gearing may be quickly thrown out of mesh by moving the knob endwise, and is only used for accurate setting of work or fine feeding. This provides a simple method for obtaining either slow or fast movement without loss of time. The No. 1 grinder will swing work 8 inches in diameter up to 24 inches long between its centers, and has a longitudinal feed of 22 inches, a cross feed of 6 inches and a vertical feed of 5 inches. Other special features are the center heads, which are arranged to be clamped against one side of the T-slot in the platen, insuring perfect alignment; the vertical swivel socket holder, shown in Fig. 2, which is graduated, as are all swiveling parts, and the iron centers upon which the emery wheels are mounted, and which may be used in either end of the grinding spindle interchangeably.

The strike of the molders at Worcester, Mass., continues. The foundries are not complaining of their present condition. The Kabley Foundry, which has been shut down during the summer while a large addition was built, will be ready to start up about October 1.

Strikes in Chicago.

An investigation of strikes called in the city of Chicago during the first eight months of 1904 reveals the fact that there have been only 92 strikes thus far in 1904, against 251 during the whole of 1903, involving 77,000 workmen and women, as against 135,000 last year. While more than half the number of strikes were at least partially successful, considerably more than half the number of people striking have been totally defeated. In approximate figures 47,000 out of 77,000 strikers have been totally defeated, while 30,000 either won their strikes, compromised with their employers or are still out. The strike in the brass workers' and chandelier makers' trades involved 1900 unionists, who struck first for a 10 per cent. increase in wages, and finally, in self defense, against the open shop plan. Their defeat was total and their unions, once all powerful, have been disrupted. The Machinists' International Unions had a hand in strikes involving 5500 people. Their first effort was to secure higher wages by compelling the payment of machinists' wages for work requiring little skill, and, defeated in this, they are now on strike against the open shop plan. While nominally still on, the strike is broken and the plants affected are running on the open shop basis or, in some cases, avowedly anti-union. The Masters and Pilots, whose strike tied up lake traffic for a number of weeks, suffered total defeat. And now the stockyards strikers, including the meat cutters and butchers and members of more than a score of other unions who went out in sympathy, are clamoring for reinstatement on the payrolls of the packing plants as individuals, at the packers' own terms, their unions discredited even among unionists.

As we have remarked before, this is not a good year for strikers, in Chicago at least, and employers of that city, for years held in the grip of unions that are dominated by socialistic, almost anarchistic, tendencies, are beginning to rejoice in the novel sensation of being permitted to have some voice in the control of their own business.

The Duty on Automobiles

The Treasury Department has issued the following statement relating to the duty on automobiles:

"1. Automobiles of foreign manufacture brought to this country for touring purposes, whether by foreigners or residents of the United States, and whether accompanying the owners or not, if to be actually used by them in this country, are entitled to free entry under bond, for a stay of three months, under the provisions of Department's circular of June 20, 1902.

"2. Under the provisions of T. D. 22,088 of March 17, 1900, automobiles are classed as household effects, if used as such for the period prescribed by law. Automobiles used in business pursuits are not exempt from duty, as, under the provisions of paragraph 504 of the act of July 24, 1897, the article must be a part of the household economy. In the case of Arthur *vs.* Morgan, household effects are defined as 'articles which pertain to a person as a householder or to a family as a household, and do not include articles used in professional or business pursuits.'

"3. Automobiles used abroad as household effects as above for a period of one year or more, whether consecutively or not, and whether or not the one year of use abroad immediately precedes the importation, are free of duty upon the filing of the usual oath.

"4. Free entry of an automobile is accorded only to the actual automobile used by the owner for one year or more, and cannot be allowed in the case of an exchanged machine which has not been used for the owner for that period.

"5. Automobiles are free of duty if used abroad for one year or more, although a period of a year or more may have elapsed since such use.

"6. Automobiles to be free of duty as household effects must have been used abroad for a period of one year or more by the owner or his family, whether driven by a chauffeur in his employ or not, but the use of an automobile by a chauffeur or friend unconnected with the owner or his family does not meet the requirements of the law."

A report on the available water power of Russia, made to the recent Russian Electrical Congress, makes an estimate of 11,000,000 horse-power, of which 3,000,000 is included within the borders of Finland.

The New Bliss Muck Bar Shear

The accompanying illustrations show the latest type of muck bar shear, built by the E. W. Bliss Company, Brooklyn, N. Y. It is offered as an improvement upon the alligator shear commonly used for the same class of work, in that it is less wasteful, cuts the bars to a more accurate length and requires but a single operator, who need not be a skilled shearman. As the bar comes from the rolls it is squared in the machine correctly and without waste, after which the shear operates automatically until the entire bar is cut into the required lengths. A machine of the size shown in Figs. 1 and 2 will cut cold bars 8 x 1 inch in cross section into lengths of from 12 to 54 inches at the rate of 40 cuts per minute.

The bars are fed into the machine by depressing a lever, A, Fig. 1, which brings the upper feed roll down on the stock, gripping it and feeding it forward. After a certain length has passed under the rolls the bar strikes a stop, B, Fig. 2, which trips a catch stopping the feeding mechanism while the piece is cut off and causing a clutch to start the shear. As the knife head descends the table C, which supports the bar, is automatically swung backward about a trunnion near the base, allowing the cut off piece to fall clear of the machine. When the knife again ascends the table is returned to receive the next length of the bar. The adjustment for length is easily made by moving the stop B along its support, and should it be desired to cut a bar of slightly greater length than that for which the stop is set, the latter may be raised out of the path of the bar by the lever D, and may be held in this position by the inserting of a pin through the lever into the supporting bracket. The machine is at all times under the control of the operator, who can stop or start the cutter independently of the tripping device, which is actuated by the striking of the bar against the length gauge.

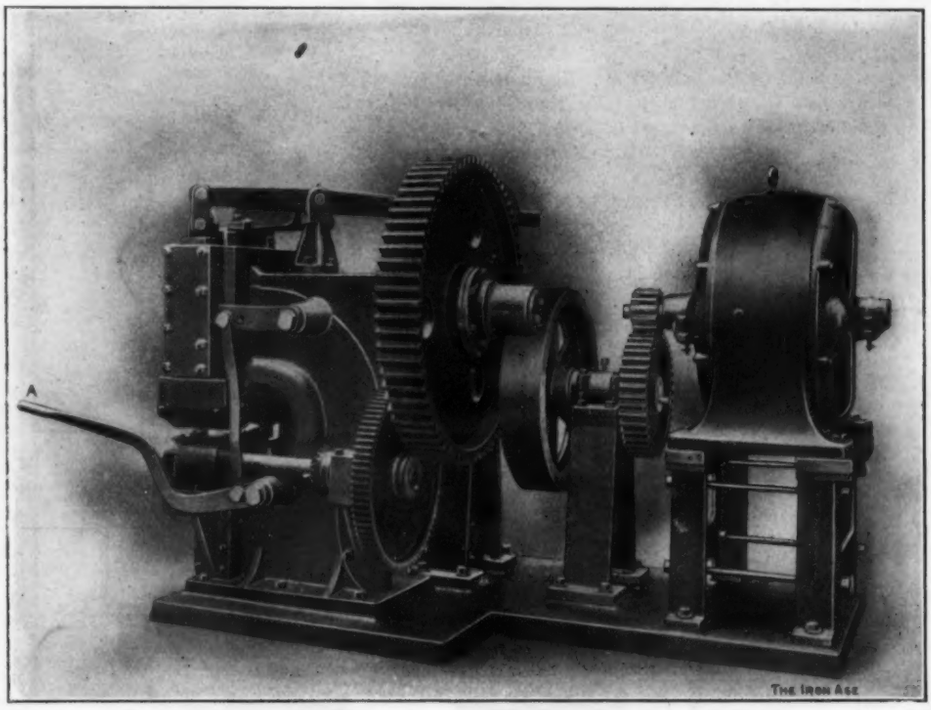


Fig. 1.—View of the New Bliss Muck Bar Shear, Showing the Side at Which the Bar is Entered.

The shear is driven by a 20 horse-power electric motor through two trains of gearing, the intermediate gear shaft carrying a heavy fly wheel. The speed of the machine can be arranged to suit the rolling mill in conjunction with which it is operated. It occupies a total floor space of 9 feet 2 inches from right to left by 11 feet 3 inches from front to back, and is 6 feet 5 inches high over all.

One of the three 8000 horse-power Westinghouse-Parsons steam turbines which are being built by the West-

inghouse Electric & Mfg. Company, at East Pittsburgh, for the New York & Long Island Railroad was recently tested at the Westinghouse works in the presence of a large number of engineers. The test was conducted without a hitch, the machine being operated at its full capacity of 5500 kw., or 8000 horse-power, running 750 revolutions per minute. Including the generator, the dimensions of the turbine are: Maximum length, 47 feet 3½ inches; width, 15 feet 8 inches; hight, 14 feet; total weight, exclusive of generator, 350,000 pounds; weight of revolving element, 47,600 pounds. It is of the regular Westinghouse-Parsons construction and is the largest ever built.

Pacific Coast News.

SAN FRANCISCO, CAL., September 4, 1904.—Although the business conditions prevailing in this State have not been as good as they might be, owing to short crops and other causes, still there has been a good deal of trade carried on in all the various branches, especially in hardware, iron and steel. Indeed, within the last couple of weeks representatives of some of the largest houses in this line have claimed to be doing a very good business and one quite as good as they did a year ago at this time. No doubt there are exceptions to this rule, but it is something that might not be expected, especially after the lugubrious plaints that have been made by a good many persons in trade. For one thing, the crops have begun to be marketed, though not as yet to any great extent, except fresh fruit. And here there is a general complaint among the producers that the commission men, and those who have special cars of their own, are taking away all the profit and leaving nothing to the grower.

There is another matter that is of a good deal of interest to the trade, both at home here on the coast and also in the East. It is that the price of oil has been reduced to 11 2-3 cents per barrel at the wells of the Standard and associated oil companies. The production of oil this year will exceed 30,000,000 barrels, a considerable proportion of which would, if nothing more were done, have to be sold at the low price referred to. This would mean a stoppage of operations at a great many producing wells, of drilling at others, and, of course, the development of new ones. Consequent on this, the sales of tools and machinery, casing, &c., used in the production of oil will fall off very materially. The independent producers, however, are united together to keep up the price of oil and to market it, and a pipe line is talked of from Kern to the sea. Should this go through, the anticipated falling off will be prevented and the producer enabled to get more of the $1 or $1.40 per barrel that this oil commands at the shipping ports.

Farmers are waiting for the rains before they order much of seasonable agricultural implements and before they will determine which land they will put under crops. So movement in this direction is rather slow at present.

The sale of the Union Iron Works, as an asset of the shipbuilding combine, comes off on September 27 and has aroused unusual interest here. The terms of the bidding require that the offer for the various parts of the property shall be close on $1,500,000, and many people doubt whether the receiver can obtain a bid of this kind. It is thought by many that the Scotts will bid in the property, and their action in the matter will give a very good idea of what the value really is, although in other hands it might not be as profitable as in theirs, even with circumstances apparently the same, in its present demoralized condition. And certain it is that the events of the past year have done no good to this once flourishing industry.

Imports by rail have been of fair volume during the past couple of weeks. By sea the Panama, or, as they will now probably be called, Ancon, steamers have brought considerable supplies of hardware, iron and pipe to this city. The "Glenburn," from Liverpool, brought 4001 boxes of tin plate and a few packages of machinery. This was all. Vessels from European ports now come to hand with very little in the way of iron and steel—quite a contrast to last year, when the larger portion of cargoes from Antwerp was of this character. J. O. L.

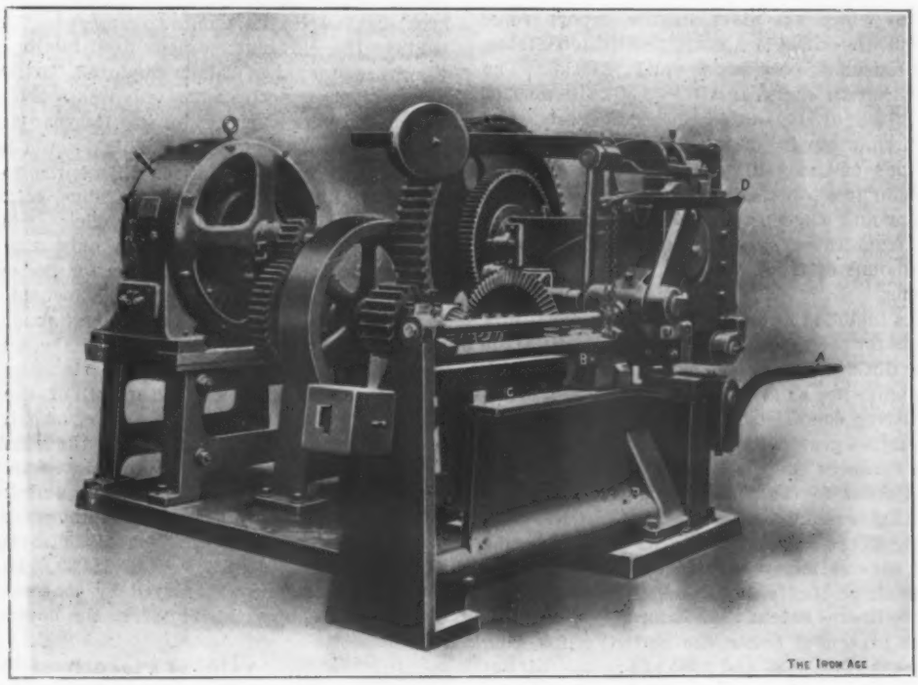


Fig. 2.—The New Bliss Muck Bar Shear, as Seen from the Rear.

Taylor, Wilson & Co., Limited.—Taylor, Wilson & Co., Limited, founders and machinists, whose present works are located on Grant street, Allegheny, Pa., will build an entire new plant at McKee's Rocks, Pittsburgh. The plant will consist of a foundry 90 x 180 feet in size, which will be a steel frame building equipped with electric traveling cranes. The machine shop will be 100 x 160 feet in size and will be erected of reinforced concrete. There will also be an office building and pattern storage warehouse. The new plant will be located on the Pittsburgh, Chartiers & Youghiogheny Railroad and is expected to be ready for operation about April 1 next year.

The Census of the Iron Ore Industry.

Phenomenal Growth Graphically Shown in Detailed Report.

WASHINGTON, D. C., Sept. 13, 1904.—The commercial aspect of the iron ore industry is presented in very interesting detail in the special report upon this subject which has just been completed for the Twelfth Census by John Birkinbine, who has been at considerable pains to avoid duplicating the data annually supplied by the reports of the United States Geological Survey. The statistics presented, as compared with those of the Eleventh Census, show a decrease in the number of mines, owing to consolidation; a very large increase in the number of officials and salaries paid, a very small increase in the number of wage earners, compared with an advance of more than 50 per cent. in the total wages paid; an increase of approximately 150 per cent. in the total product, and of nearly 100 per cent. in the value thereof.

Output in Census Year.

The statistics which are given in the report refer solely to the iron ore mines located in the United States, excluding the insular possessions and Alaska. The statistics show that in the year 1902 35,567,410 tons of iron ore were mined in the United States, 25 States and Territories contributing to make this total. This includes 13,275 tons of manganiferous iron ores obtained with the Colorado iron ores. These ores were included because the labor and wages expended on them could not be segregated from those expended on the iron ores proper. The amount of true iron ore produced was 35,554,135 long tons.

The statistics included in this report do not show fully comparative data for the various census years, because the inquiries at the different census periods were not identical. However, such statistics as are shown will aid in a study of past and existing conditions. Prior to 1880 the number of iron ore mines grew with the pig iron industry, individual blast furnaces depending largely upon mines which were adjacent to the plant or controlled by the same owners. Subsequently, as blast furnaces were enlarged, requiring greater amounts of iron ore, it became necessary that several mines should combine under the same management, or that existing mines should be exploited to a more liberal extent than before.

In the table presented below the statistics for each of the census years 1902, 1889 and 1880 are presented, but a *resumé* of the data, as far as it could be collated, for 1850, 1860 and 1870 may be here given. In 1850 the "number of establishments" was 197; the wage earners were 2195, receiving a total of $590,866 in wages; the cost of supplies and materials was $63,651, and the value of the product was $1,217,803.

In 1860 the total amount of iron ore mined from 157 regular mining establishments was 908,300 short tons, or 810,982 long tons. Shese establishments gave employment to 3177 persons, to whom $901,852 was paid in wages, and $249,699 was the cost of raw material. In addition, many of the large iron works of the country either owned or leased mineral lands and mined their own ore, the quantity thus raised in 1860 amounting to 2,309,975 short tons, making the total quantity raised in 1860 3,218,275 short tons, or 2,873,460 long tons. At an average price of $2.40 per short ton, the total value would be $7,723,860.

In 1870 there were 420 regular mining establishments, employing 15,022 wage earners, who received as compensation $6,838,022. The cost of supplies and materials was $1,279,563. The product was 3,395,718 short tons, equivalent to 3,031,891 long tons, valued at $13,204,138. This production does not include the amount raised, between 800,000 and 900,000 tons, by some of the blast furnace operators; so that at a low estimate the production of 1870 reached a total of at least 3,831,891 long tons.

Comparisons with Previous Censuses.

The inquiries for the census years 1880, 1889 and 1902 were more nearly identical than any of the others, and therefore a comparison of these gives results of greater immediate value. The statistics for those periods are summarized in the following table:

	1902.	1889.	1880.
Number of mines.....	525	592	*
Number of operators....	332	*	805
Salaried officials, clerks, &c.:			
Number	2,405	520	1,253
Salaries	$2,113,230	$529,043	†
Wage earners:			
Average number.....	38,851	37,707	30,415
Wages	$21,531,792	$13,880,108	$9,538,117
Contract work.....	$425,292	$1,578,010	*
Miscellaneous expenses...	$8,257,714	$3,795,509	*
Cost of supplies and materials	$9,005,608	$4,998,988	$2,894,011
Product:			
Quantity, long tons.	35,567,410	14,518,041	7,120,362
Value	$65,465,321	$33,351,978	$23,156,957

* Not reported. † Salaries included in wages.

Wage Earners and Wages.

The number of wage earners and salaried officials was 38,227 in 1889 and 41,256 in 1902, but the compensation paid them increased from $14,409,151 in 1889 to $23,645,022 in 1902. It would appear, therefore, that the proportionate increase in the amount paid was much greater than in the number employed. This is due, in part, to the different methods used in the calculation of the average number of men employed. In 1902 the number of employees in active mines only was considered, and the average number employed during the year was reduced to correspond with the number which would be required at "continuous employment for 12 months to produce the quantity of product reported." Thus, if 200 men were employed at an open cut mine, which, owing to climatic conditions, could be operated for only nine months during the year, the average number for the entire year, as determined in 1902, would be 150, instead of 200. The proportionate increase in the amount paid, therefore, is not as much greater than that in the number of employees as it might seem from the statistics.

Moreover, in the 1889 census all of the persons employed at mines which were active, or might again become active, were included. If to the number given for 1902 in the above table those employed in the exploitation of mines not yet shipping ore and in mines temporarily idle be added, the total number of persons employed would be increased from 41,256 to 41,551, and the wages from $23,645,022 to $23,822,339. In addition, in 1902, 1365 men were employed by contractors in active mines and in development work, the contractors receiving $641,460.

Value of Product.

In 1902 the quantity of ore mined was about five times the product in 1880, but the value of the ore produced in 1902 was less than three times that of 1880. The total value at the mines of the 35,567,410 tons of iron ore produced during the year 1902 was $65,465,321—an average of $1.84 per ton. The value of the 14,518,041 long tons produced in the year 1889 was $33,351,978, or $2.30 per ton. This shows an increase in quantity of 21,049,369 long tons, and in value of $32,113,343. Because of the greater use of labor saving appliances and other savings of cost, resulting in part from the consolidation of contiguous mines, the average value per ton shows a reduction of 46 cents, or 20 per cent.

In the following statement the average value at the mine per ton of iron ore is presented for the census years from 1860 to 1902, inclusive. The figures for the regular mining establishments are taken for the earlier years, as the difference in total amount would make little change in the average value per ton of product.

Census year.	Average value.
1860	$2.69
1870	4.35
1880	3.25
1889	2.30
1902	1.84

In the earlier census years the mines were nearer the furnaces, while in the later ones the ore was carried long distances to points of consumption. This explains, in part, the higher value at the mines in former years.

Development Work.

In connection with mining a certain amount of preparatory or exploratory work is always required. In

most of the producing mines the labor, cost of supplies and materials and miscellaneous expenses incidental to such work are charged to the regular operating expenses, and do not appear separately in the reports. There are, however, in addition, a number of mines which are mere explorations or developments, not having produced any ore, or old mines which, having been abandoned, have been reopened. It is difficult to obtain accurate information in regard to the expenditures for work done preparatory to the actual shipping of the ore, especially where a company has not been organized, but such data as could be secured are here presented.

There were 37 unproductive mines engaged in development work in the United States in 1902, capitalized at $2,685,000, employing on the average 28 salaried officials and 267 other employees, who received $177,317; the cost of supplies and materials being $143,541, and the miscellaneous expenses $68,533. While these figures do not present the full amount of expenditures for this class of work during 1902, they give some idea of the expense necessary before mines become productive. The most active exploitation of new deposits was in the States of Minnesota and Michigan. In most of the older States, such as New York and New Jersey, little exploratory work was done, except by active companies; such work was included in the reports of the active mining operations of these companies.

In addition to the mines included in the above table there were 220 mines which appear to have been entirely inactive during 1902 as regards production or exploratory work, no expenses for such work having been reported.

The mines classed as idle should not be considered as including abandoned mines or openings which have been idle for a long time with no effort made to revive them, nor do they include mines which have been dismantled. The purpose attempted was to add to the record statistics covering such mines or operations as may probably be producers in the near future.

Capitalization of Incorporated Companies.

It is difficult to arrive at a fair determination of the proportion of capital stock and bonds properly chargeable against iron ore mines when operated by corporations owning blast furnaces and rolling mills, coal mines, railroads, &c., or by companies subordinate to parent organizations, or where the mining property is leased. Thus, A leases an iron ore property to B, who for this lease pays either a definite sum or, more often, a fixed or sliding scale royalty per ton for the ore taken out for a given time, usually a minimum annual output being stipulated.

The operations may be upon a small part of the property owned by A, but if A places a value upon it, this value would probably include the entire tract. B can fix no value for the iron ore property, being merely a lessee, and would probably base his valuation upon the royalty he pays, capitalized, which will be constantly changing, as the mines are worked energetically or otherwise, or as the demand for ore is active or slack. The owner or the lessee may or may not be interested in the manufacture of iron. There are cases where the mines of an iron producing company are worked under lease for the advantage of another company, because of the location of the deposit as related to the works of the owner or the lessee.

In some instances companies organized years ago with moderate capital own or control large mines or land containing reserves of ore, the properties representing many times the capital stock of the company. In one instance there is a record of a company whose dividends in one year equaled the entire capitalization of the company. On the other hand, organizations capitalized in late years have iron ore holdings of comparatively small value, or are apparently overcapitalized if the market value of the stock is considered. In the State of Minnesota some mines are owned in fee simple; others are on lands belonging to the State, which issues a mining lease at a fixed royalty. Some of these mining leases were secured by parties who sold them for a lump sum, varying according to the amount of ore which is believed to exist on the property, or leased the property subject to the first and also a second royalty, usually from 5 to 20 cents per ton, a minimum amount of ore being specified to be won each year. In such cases the companies operating the mines are in reality sublessees, and there are instances where a third lease has been made, and the par value of the stock may not represent anything like the true value of the ore deposit. In some of the Southern States a number of mines are worked by mining companies, who win the ore from the deposits and deliver it f.o.b. at the mine at a fixed rate, which is paid by the owners of the property, and in this case the returns from this mining company would merely represent the value of the equipment used, and would not include the value of the ore property, which may be many times greater than that of the machinery, tools and appliances used by companies which are really contractors.

In the Southern States and in the Lake Superior region many mines are leased, the capitalization of the operating company representing merely the value of the lease and not of the land. In addition to earnings on the capital stock of the company a fixed or, in some cases, a sliding royalty is paid, which, in the latter case, is based upon the market price of the ore; this royalty value is not recognized in the capitalization.

Details of Capitalization.

The following table presents the details of the capitalization of 183 incorporated companies reporting capitalization in 1902:

State.	Companies reporting.	Stock and bonds issued.	Stock issued.	Dividends paid.	Bonds issued.
United States	183	$247,798,970	$233,933,470	$6,329,405	$13,865,500
Alabama	25	22,122,470	17,477,970	420,999	4,644,500
Colorado	18	27,765,000	27,665,000	102,000	100,000
Georgia	8	4,274,300	4,197,800	.....	76,500
Maryland	1	1,000,000	500,000	.....	500,000
Michigan	32	96,458,000	94,039,000	3,270,483	2,419,000
Minnesota	26	56,532,200	56,532,200	1,720,983	.....
Missouri	4	305,000	305,000	40,000	.....
New Jersey	7	5,988,400	5,388,400	75,000	600,000
New York	10	10,129,900	8,559,900	314,021	1,570,000
Ohio	5	598,000	587,500	.....	10,500
Pennsylvania	11	5,464,225	2,614,225	43,579	2,850,000
Tennessee	9	1,040,000	895,000	.....	145,000
Virginia	11	5,702,600	5,102,600	52,500	600,000
Wisconsin	6	7,335,375	7,335,375	280,000	.....
Other States	10	3,083,500	2,733,500	9,840	350,000

In the statistics presented in the above table, where the iron ore lands are owned by companies operating blast furnaces, steel mills or other industrial enterprises, an effort was made to secure an approximate proportion of the capitalization which would properly be chargeable against the iron ore mines; but when such proportion was not obtainable the statistics are for the capitalization of the company.

The table shows that a large proportion, 64.6 per cent., of the capitalization of stock and bonds was reported from the iron mines in Minnesota, Michigan and Wisconsin, which, with the exception of a few outlying mines, are embraced in the Lake Superior region. These three States produced 76.1 per cent. of all the ore mined in 1902.

Next to the Lake Superior region, Colorado shows the largest capitalization; but much of the iron won in that State is from mines of the precious metal. In some instances this argentiferous iron ore is the only mineral

at present won from the operation, and therefore the entire capitalization (originally based on the supposed value of the mine as a precious metal producer) is included in the iron ore report.

Alabama ranks next to the Lake Superior region and Colorado in the capitalization, as would naturally be expected from the large amount of iron ore produced. New York, New Jersey, Virginia, Pennsylvania and Georgia follow, in the order named, the remaining States being comparatively unimportant, so far as the capitalization of their iron mining companies is concerned.

In the year 1902 the capitalization, including funded debt, of 188 incorporated companies owning active iron ore mines reached a total of $247,798,970. In the year 1889 returns were secured from tne 592 different mines of the value of the land, buildings and fixtures, tools and implements, and the amount of cash and stock on hand, showing a total of $109,766,199. Therefore, no information of comparative value is obtainable from a study of the reports of the capital invested in iron ore mines at the two census periods.

Output Per Wage Earner.

While the States of Minnesota and Michigan produced 73.8 per cent. of the iron ore mined in the United States in 1902, the average number of wage earners in those States represented only 58.4 per cent. of the total for the country, and a calculation shows that for each wage earner in those States 1.156 tons of iron ore were produced. In Michigan the tonnage per wage earner was 770; Alabama, 735; Colorado, 733; Pennsylvania, 722; Tennessee, 673; Wisconsin, 576; New York, 575; Georgia, 480; Missouri, 448; Virginia, 362; New Jersey, 266, and Ohio, 204. The average for the United States was 916 tons per wage earner in 1902, as compared with 385 tons in 1889. The actual increase between the two census periods was somewhat less than that indicated, owing to the difference in the method of computing the average number of wage earners at the two censuses.

Out of a total of 38,851 wage earners, 23,082 are reported as employed below ground—that is, of the total number of wage earners engaged in the iron ore industry, 59.4 per cent. are employed below the surface, the remainder being engaged upon surface mining or upon the work above ground. It is also shown that out of a total of 38,851, those returned as miners and miners' helpers number 20,849, which suggests that slightly over one-half of those engaged in the iron ore industry may be considered as actually digging the ore. Exact comparisons between the number of wage earners at the Eleventh and Twelfth censuses cannot be made by reason of the fact that in 1902 the number of employees was reduced to the basis of practically continuous work (300 days) during the year. However, out of a total of 37,707 employees reported in 1889, 19,708 were returned as working below ground. The miners and laborers below ground, who may be considered as representing miners and miners' helpers, showed a total of 18,911 in 1889. The miners engaged in large open cut operations were classed as laborers, and if the number of these be added to the above total, and this again corrected for the employees who were not actually helpers, the resulting figure indicates that practically the same ratio held good in 1889 as in 1902—namely, that about one-half of the wage earners at iron ore mines may be considered as having actually dug the ore.

Rates of Pay.

Of the States for which statistics are presented separately Minnesota shows the highest rates of pay, 97.1 per cent. of the wage earners having received at least $1.75 per day, and 34.5 per cent. of these $2.25 per day or over. The rates of pay were only slightly lower in Michigan and Wisconsin. In the former State 11.2 per cent. received between $1.50 and $1.74, while in Wisconsin the proportion with rates of $2.25 or over was considerably smaller than in Minnesota. Michigan, Minnesota and Wisconsin constitute the Lake Superior district, and the rates in these three States were materially higher than those in the other States. In each of the three States of the Lake Superior district the bulk of the wage earners received $2 per day or over, while in each of the other States, for which statistics are shown separately, practically all of the wage earners got less than $2 per day.

The State in which the daily rates of pay approached most nearly those of the Lake Superior district is New Jersey, where the range of wages for 91.4 per cent. of the employees was from $1.25 to $1.99. New York, Alabama, Tennessee and Pennsylvania follow in the order named. New York shows a considerable number with rates of less than $1.25 per day and a comparatively small number who received as much as $1.75. In Alabama the bulk of the wage earners, 89.3 per cent., received between $1 and $1.99. There was very little difference, on the whole, between the rates paid in Pennsylvania and those paid in Tennessee. The proportion receiving $1.75 or over was greater in Tennessee, but the number who received less than $1 was so large as to offset this. Rates were lower, on the whole, in Virginia than in any other State which reported a large number of wage earners, only 7.1 per cent. of the total number having been paid as much as $1.50 per day.

More than half, 52.8 per cent., of the total number of engineers receive $2 or over. Most of the engineers are, however, concentrated in the $2 group, and the two groups below, 71.2 per cent., receiving between $1.50 and $2.24. The wages for firemen are somewhat lower than those for engineers. For firemen the lower limit median rate group is $1.75, while for engineers it is $2; in each case a greater number of employees is included in the median group than in any other group.

The range of wages for over 82 per cent. of machinists was from $1.50 to $2.74. The median rate lies between $2 and $2.24, and the distribution both above and below that rate is comparatively regular. In this occupation, also, the median group comprised a greater number of men than was found at any other rate.

The statistics show a very wide range in the rates paid to miners. The wages for the bulk of employees ranged from $1 to $2.74, with the median at $2. By far the greater portion of miners' helpers are concentrated in three wage groups, the range for 77 per cent. being from $1.50 to $2.24.

The median wage for timbermen and tracklayers was between $2 and $2.24, and the bulk of the employees received from $1.50 to $2.74.

Almost half of the boys employed, 48.3 per cent., received between 50 cents and 75 cents; 27.2 per cent. received less than 50 cents, and 19.1 per cent. received between 75 cents and $1. The median rate for all other wage earners was between $1.75 and $1.99. The wages for 92.2 per cent. of the total number ranged from 75 cents to $2.24.

Mechanical Power Employed.

The returns show 119,558 horse-power was used at iron ore mines in the various operations requiring power. This power was applied chiefly through 1132 steam engines, with a total of 102,878 horse-power, or 86 per cent. of the total. There were also 11 gas or gasoline engines, with a total of 86 horse-power; 11 water wheels, having a total of 1010 horse-power, and 260 miscellaneous appliances, with a total horse-power of 5444. Fifty-five electric motors were used, their total horse-power being 937; 140 horse-power was rented to other establishments.

At the census of 1889 1109 steam boilers, with a total horse-power capacity of 57,976, were reported by iron ore mines. It was stated in the report on iron ore at that census that these boilers furnished steam to 1093 steam engines, including air compressors, hoisting machinery and engines for driving washeries, &c. In 1902 the mechanical power was applied for the purposes for which power is commonly employed in mining work—namely, for hoisting the ore from the shaft, and for subsequent beneficiating treatment for operating steam shovels and dredges in open cut mining, pumping and ventilating machinery, mechanical haulage, air compressors, &c.

Classification of Ores.

The following table presents for each class of iron ore the amount produced in the census years 1880, 1889 and

1902, together with the percentages which these amounts formed of the total for all classes:

Variety.	1902. Quantity. Long tons.	1902. Per cent. of total.	1889. Quantity. Long tons.	1889. Per cent. of total.	1880. Quantity. Long tons.	1880. Per cent. of total.
Red hematite	30,532,149	85.9	9,056,288	62.4	2,243,993	31.5
Brown hematite	3,305,484	9.3	2,523,087	17.4	1,918,622	26.9
Magnetite	1,688,860	4.7	2,506,415	17.2	2,134,276	30.0
Carbonate	27,642	0.1	432,251	3.0	823,471	11.6
Totals	35,567,410	100.0	14,518,041	100.0	7,120,362	100.0

There has been an increasing preference for rich and easily smelted iron ores, and, considering the different varieties of ore, it will be found that the amount of red hematite reported in 1880 was but 31.5 per cent., in 1889 62.4 per cent. and in 1902 85.9 per cent. of the total output. The brown hematite, although augmenting in the amounts mined, indicates a decided decrease in percentages of the total; from 1,918,622 long tons in 1880 this class of ore increased to 2,523,087 long tons in 1889, and 3,305,484 long tons in 1902, the percentages in the three censuses being, respectively, 26.9, 17.4 and 9.3 per cent. On the other hand, the magnetites and carbonates have shown a decline, not only in total production, but also in percentage. The former contributed 30 per cent. (2,134,276 tons) of the total in 1880, 17.2 per cent. (2,506,415 tons) in 1889 and 4.7 per cent. (1,688,860 tons) in 1902. The carbonate ore has fallen from 823,471 long tons in 1880 (11.6 per cent.) to but 27,642 tons in 1902 (one-tenth of 1 per cent.) of the total.

Pig Iron Production.

The phenomenal record made in producing pig iron in the United States is illustrated by the following table covering the years 1894 to 1902:

Year.	Long tons.	Year.	Long tons.
1894	6,657,388	1899	13,620,703
1895	9,446,308	1900	13,789,242
1896	8,623,127	1901	15,878,354
1897	9,652,680	1902	17,821,307
1898	11,773,934		

This record naturally invites attention to the materials entering into the manufacture of pig metal, the character of these materials and the sources from which they are obtained. Fuels, iron ores and fluxes, components of commercial pig iron, in passing through blast furnaces produce either pig iron in merchantable form or liquid metal, to be carried to Bessemer converters or open hearth furnaces. In 1902 an effort was made on behalf of the Canadian Government, in equating bonuses to iron industries, to discriminate against liquid metal being classed as pig iron, but the contention was not sustained, and commercially the entire product of blast furnaces smelting iron ore is considered and reported for statistical purposes as pig iron.

For the production of the quantity of pig metal credited to the United States in the year 1902 there were required about 30,000,000 tons of bituminous coal (the larger portion of which was converted into coke) and about 1,500,000 tons of anthracite coal. In addition to mineral fuel, probably 350,000 tons, or 38,000,000 bushels, of charcoal were consumed in blast furnaces. About 33,000,000 tons of iron ore were fed to the furnaces, and the flux necessary to carry away the impurities of the ores is estimated at about 8,500,000 tons. Therefore, to supply the blast furnaces of the United States in 1892, which produced nearly 18,000,000 tons of pig iron, there were required about 73,000,000 tons of raw materials.

Total Consumption of Iron Ore.

In the manufacture of pig iron a considerable quantity of rolling mill cinder, roll scale, &c., is also employed practically as ore. Some "blue billy" or "purple ore," resulting from the calcination of pyrites and the residuum from roasting ferriferous and manganiferous zinc ores, are also utilized. The total amount of iron ore and of materials used as ore made available in the United States in 1902 may be approximated as follows:

	Tons.
Domestic iron ores	35,567,410
Foreign iron ores	1,165,470
Roll scale, mill cinder, blue billy, &c	1,900,000
Total	38,632,880

Some iron ore is employed for other purposes than for the manufacture of pig iron. It forms an important part in the charge of many open-hearth steel furnaces, and is used also for fix in puddling and other furnaces, for flux in silver smelting, and in making metallic paints. After making allowance for the other materials that are used as ore, and deducting the quantity of ore which is applied to purposes other than iron production, the actual quantity of iron ore and materials used as ore entering into the manufacture of pig iron in 1902 is found to be, approximately, 33,000,000 long tons.

The active demand for iron ore to maintain in operation the blast furnaces of the United States, and the expectation that this demand would continue, were responsible to a great extent for the phenomenally large output of the iron ore mines in the year 1902. Large stocks of ore accumulated at or near blast furnace plants aided in swelling the total iron ore supply to figures never before reached, and which may not be exceeded in the near future.

Value of Iron Ore Deposits.

The determination of the value of iron ore deposits is difficult, for they are only serviceable in so far as the material of which they are composed may be utilized. Thus, a mountain of excellent iron ore remote from blast furnaces or other means of utilization, without transportation facilities to carry the mineral to points where markets exist, would stand practically useless until these conditions were modified.

The quality of the iron ore obtainable has a decided influence upon the value of the product and therefore upon that of the deposit. Ores low in phosphorus, although with moderate iron content, command premiums over those carrying this element in excess, and in the present state of metallurgical development ores carrying titanium are considerable, although in the near future they may possible be sought after. A sulphurous ore requiring roasting is less desirable than one free from sulphur, and ores which require washing or beneficiating, either by jigs or magnetic separators, have less value than those which can be used in their native state. Therefore the apparent quantity and average quality of an ore in a deposit and its accessibility to markets or prospective points of consumption affect its value. Where a mine is producing and where the tests made to determine the apparent extent of the deposit are satisfactory its value may be gauged by capitalization based upon a royalty charge for ore mined, for in an ore deposit the material taken out is not reproduced and therefore some allowance covering a value for the ore won is proper.

The difficulties of determining the value of iron ore deposits are increased by the fact that in some instances mere mining rights are granted, while in others a proprietor may allow a mining company to take ore at a fixed rate per ton, or upon a sliding scale. In still other cases the ownership is in a State which grants mining leases at tonnage rates; these leased properties, after having been explored or developed, are sublet, and thus two or more royalties may be cumulative. A deposit of ore has no definite value to the lessee or sublessee other than what he gets out of it during the term of his lease, for he has no interest in its future and the owner can practically base no estimate of value except by capitalizing its earning capacity, providing that earning capacity can be maintained. Another feature which has caused trouble in an attempt to determine approximate valuations for the iron ore deposits of the United States has been that a company may own or lease a considerable tract of land only a small part of which has been explored or exploited. It would be manifestly unfair to

base an estimate of the value of the entire property upon results obtained from a limited area.

Value of Reserve Deposits.

During July, 1902, an interesting suit in chancery developed the estimate which the officers of the United States Steel Corporation placed upon its iron ore properties. Practically this estimate claimed that the corporation had in reserve, in deposits which had been tested, over 700,000,000 tons of iron ore, upon which the company placed a value to itself of $1 per ton. This was not merely a royalty estimate, but represented what the officers of the corporation considered the ore was worth as a material for conversion into merchantable products, taking into consideration the location of the deposits in relation to its furnaces and mills, and the fact that as far as known this supply could not be duplicated elsewhere, certainly not within any limit of transportation to the corporation's existing plants. This valuation was questioned because an official of the corporation had stated that it had reserves of ore and fuel sufficient for 60 years, the assumption being that the value of a supply of mineral which would not be exhausted before 60 years would be strongly affected by the interest which the money invested should earn in that time. In a case such as indicated, an iron ore deposit which produces a quantity of ore desirable in quality, so as to be of material service to the industry, undoubtedly possesses a value to the owners which is not fully measured by a mere royalty charge, for it acts as a basis for supplying raw material, and gives the owner not only a possible profit on the mining, but a protection in cases of fluctuations in prices of ore, a value hard to estimate in money. W. L. C.

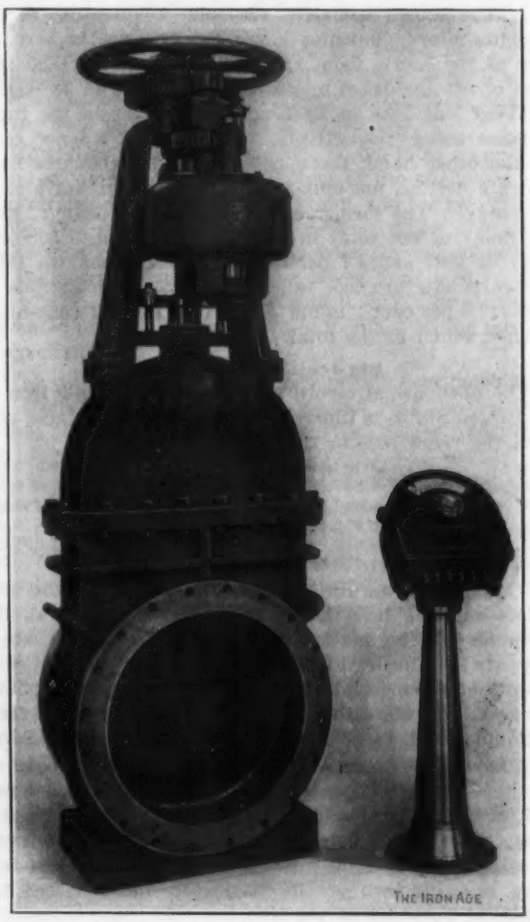
The Chapman Electrically Operated Valve.

In the equipment of large power plants the valves are among the most important appurtenances. The arrangements for operating them are next in importance, and much consideration has been given to the subject. Up to a certain point hand manipulation will suffice if the valve is accessible, but for very large sizes it becomes necessary to employ mechanical means to open and close them. Hydraulic, pneumatic and steam operated valves all have their limitations, and a demand has arisen for valves operated by electric motors, due to their peculiar advantages. This has led the Chapman Valve Mfg. Company of Indian Orchard, Mass., to adopt this arrangement, as it offers a practical means for rapidly handling large gate valves or sluice gates under ordinary conditions, and especially in cases of emergency.

In the designing of such apparatus the conditions governing the application of the electric motor to the valve were found to differ entirely from its application to all other machinery, inasmuch as the travel is limited to the size of the valve opening. The difficulties of the problem were overcome by the use of a series wound motor especially adapted for the purpose, in connection with a lost motion device, enabling it to attain practically a runaway speed. On account of its winding, the motor exerts a heavy torque in starting, striking a hammer blow which insures unseating the valve. The electric operation also makes possible automatic indicating and controlling devices, no matter how remote. Valves of this class are especially suited for water, steam and oil lines, and for low pressure work, such as exhaust and condenser piping, pump sections and discharge sewage and irrigation systems. They are also extensively used on the receiver piping of compound and triple expansion engines and are rapidly coming into use as throttle valves on steam turbine units.

The Chapman gate valves are of the double faced, solid wedge, plug type, and have a straightaway passage the full diameter of the connecting pipe. This is the simplest and strongest design for the purpose. It requires the smallest number of working parts and offers the least resistance to the passage of the fluid. These valves have been carefully designed, and while retaining the general features which distinguish valves of this make have in addition certain improved ideas in valve contruction. They are intended to withstand hard usage and the design may be readily modified to meet special requirements. The compactness and simplicity of construction of the patented arrangements enable the use of a very small motor, which is, however, large enough to open the valves under all conditions, and in closing there is no danger of forcing them to their seats so tightly that they cannot be easily opened without resorting to hand power. They are made in all sizes from 6 to 72 inches and for both direct and alternating current, any voltage, phase or frequency.

The accompanying illustration shows a 24-inch Chapman valve with a General Electric motor and the controller for remote control. With this device the valve may be controlled from any desired point and the exact position of the gate is indicated at all times. The valve



A 24-INCH ELECTRICALLY OPERATED VALVE AND ITS CONTROLLER.

may be opened or closed any fractional amount by moving the controller handle to the corresponding point. When the gate has reached this position the motor is automatically cut out. In case of an emergency the valve may be opened or closed, as desired, by pressing one of the numerous buttons, located at different points about the station. This starts the motor, and when the valve is fully opened or closed, as the case may be, the circuit is automatically broken.

The apparatus illustrated may be seen in operation at the General Electric Company's exhibit, Space 26, Palace of Electricity, World's Fair, St. Louis, Mo.

The gradually increasing size of ships of all classes is shown by an examination of the port statistics for the port of London for the past few years. In 1899 the total movement of shipping in that port amounted to 46,099 ships, of an aggregate of 22,175,116 tons, the average being 482 tons. In 1902 the figures stood 47,131 ships, 24,415,663 tons, and an average of 519 tons. The results for 1903 were 49,545 ships, 25,896,191 tons, and an average of 523 tons. Thus the mean size in 1903 was nearly 1 per cent. greater than that for the previous year, and more than 8 per cent. above that for 1899.

St. Louis World's Fair Notes.

The long delayed air ship contest at the World's Fair is at last under way, and will continue until the close of the fair; $200,000 in prizes have been offered and 95 entries have been received. The first prize will be $100,000, and will be awarded to the contestant who sails a dirigible air ship in the fastest time over a designated L-shaped course 10 miles long. The full course must be covered three times at an average speed of at least 20 miles an hour. The other $100,000 will be offered in prizes of various sizes for air ships which do not carry an operator, or for aëroplanes and kites.

Several air ships are now stabled in the aërodrome. Among these is one invented by T. C. Benbow of Montana, which made a successful flight last November at Frankfort, N. Y. It has a cigar shaped gas bag 70 feet long, with a capacity of 16,000 cubic feet, capable of lifting 600 pounds. A novel scheme characterizes its operation. It has four propeller wheels with four blades each, which are driven by a 10 horse-power motor. These are placed at the side, after the manner of the paddles on a side wheel steamer, instead of at the rear, and are used to assist the rudder in steering. To raise or lower the ship, it is not necessary to drop ballast or permit the escape of any gas, and it can turn around in its own length. This control is obtained by turning the blades, so that with the same direction of rotation one wheel can be made to oppose or to have a greater or less effect than its opposite mate. Just what speed the ship will attain is not known, but a fair rate is anticipated, as the blades now make 75 revolutions per minute, whereas they made but 45 at the last trial.

The French machine brought over by Hippolyte Francois of St. Mande has a gas bag holding 54,000 cubic feet, and is driven by four screws from a 24 horse-power gasoline motor. Experiments made by the inventor with a similar but smaller model were very successful, the machine attaining a speed of about 45 miles an hour.

H. E. Honeywell, St. Louis, has a dirigible air ship, the gas bag of which is shaped like the hull of a sailboat of the "skimming dish" pattern, and the frame work is constructed of aluminum tubing. It uses propellers placed at the rear of the frame which supports the basket, these being driven by motors.

Much secrecy attaches to the air ship entered by Edward Hutchinson of Chicago, as the construction and principles of its operation have not been revealed. The inventor has great confidence in his machine, and promises a surprise to the scientific world when it is shown to the public.

Marcellus McGarry of Memphis, Mo., has had his air ship on the ground for some time. It is of dirigible form, having a cigar shaped bag. The forward motion will be furnished by a set of wings which are constructed on the principle of those of a fly.

Dr. August Greth of San Francisco, Cal., has a dirigible balloon, which has already made two successful flights of several miles each. The car is of aluminum, and is supported by a pear shaped gas bag, with its pointed end forward. It is steered by a large rudder placed some distance from the rear of the car, and has a light gasoline motor resembling those used in automobiles.

The aëronautical contest will be under the direction of Percy Hudson, assistant chief of the Department of Transportation Exhibits, whose wide experience in this line of work admirably qualifies him for the task in hand.

Russia's Only Representation at the Fair.

Russia's only building at the Louisiana Purchase Exposition is in the Palace of Transportation, and was erected by the Westinghouse Company, Limited, of St. Petersburg, as a feature of the Westinghouse brake exhibits. It is representative of Russian art and workmanship, and is recognized as the general Russian rendezvous at St. Louis. In the Palace of Machinery the same company has furnished a small Russian kiosk at the head of the row of national booths erected by the different Westinghouse companies of Europe and America.

The pavilion in the Palace of Transportation covers a space 20 x 25 feet, and is 25 feet high. It was constructed by peasant builders in the Possade Sergiewo, near Moscow, after designs by the native architect, Baranowsky, who has done much important work in St. Petersburg. Although buildings of a similar character are still built to-day in the interior of Russia, on a less elaborate plan, for small homes and pavilions, the style of construction is quite primitive, the exterior being that of a forest log cabin. The logs are neatly hewn, however, and notched together so closely that no open joints remain to be plastered as in American huts. The rafters of the high roof, also, are mortised into the plate, and no nails whatever are necessary in the construction. The entire building was shipped to this country in boxes. The fantastic taste of the peasants is indicated in the curiously sawn eaves, gables and cornices, which are elaborately ornamented and painted in the gayest colors. The material used throughout is a white pine from the forests around Moscow, very effectively stained in the case of the carved furniture. All the interior decoration was designed by Durnowo, whose works have been highly appreciated in the Russian buildings at many international expositions. One entire wall is covered by a hand painted map of the world, by Ingenier Prochanof, with Russian text, the only large Russian map on the grounds, and Russian visitors are further attracted by files of newspapers and periodicals. U. Grant Smith, brother of the general manager of the Russian Westinghouse Company, is in general charge of the Russian exhibit, and Gospodin M. N. Konshin of St. Petersburg receives and welcomes his countrymen at the fair.

Sweet's Steel Company.

Sweet's Steel Company has closed its Syracuse (N. Y.) plant and all operations are conducted at the new works in Williamsport, Pa. The commencement of these works was made 40 years ago at Syracuse by William Sweet, who held control up to four years ago, and died in January of this year. At first the reworking of crop ends from steel rails was undertaken, and later the reworking of old steel rails by slitting into three pieces and rolling these into various finished steel products, the manufacture of open hearth steel being added about five years ago. The new works at Williamsport are much larger than the old plant. Five buildings, required for manufacturing, are completed, and it is expected that machinery will all be installed and running during this month. The building for general offices has yet to be erected. The building of the open hearth department is 100 x 200 feet, having three 15-ton basic open hearth furnaces, three traveling cranes, grinding machinery, &c. The rolling mill building is 200 x 320 feet, equipped with four trains of rolls and gas furnaces, and included in this building is a hammer shop having three steam hammers. The machine shop is 45 x 160 feet, of two stories. It has a full line of the latest machines and tools for construction and repairs, the cranes, shears and all other detached machinery being operated by electric motors. In the power house there are three Straight Line engines and four generators. The pattern shop is in the machine shop building. The boiler and power house are in the same building, 42 x 150 feet. There is a coal trestle for delivery of coal directly in front of boilers. The gas house building, 30 x 100 feet, is equipped with five Duff water sealed gas producers to furnish gas for the open hearth department and rolling mill, coal being delivered on the platform of the producers by a coal trestle. There are six side tracks, giving connection with the Reading, New York Central & Hudson River and the Pennsylvania railroads.

The company manufacture machinery, toe calk, buggy tire, sleigh shoe, crowbar, harrow tooth and spring steel and over 300 special shapes. They also manufacture to order special analysis open hearth steel. The president of the company is Edward H. Burdick; vice-president, H. L. Stevens; treasurer, C. H. Knapp; general manager, J. W. Maxwell, and secretary, F. M. Sears.

A cog wheel railway is to be constructed on Mt. Blanc. Surveys are to be made next spring and the work will be completed in six years.

The Iron Age

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DAVID WILLIAMS COMPANY, - - - - - - - PUBLISHERS.
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The British Workmen's Compensation Act.

The British Workmen's Compensation act has been in operation since 1897, a period of time long enough to afford a sufficient test of its workings. Therefore the report of a Home Office committee appointed to investigate the subject is one of considerable interest, since similar legislation is considered by many persons versed in the laws governing the liability of employers for injuries sustained by workmen as being certain of eventual adoption in the various States. The committee had two objects—to ascertain what amendments are necessary to make the act more equitable to employer and employee, and to decide what additional classes of workmen should be included in its scope.

Contrary to general prediction, the act has imposed no additional burden upon the employer. It was supposed that such compulsory compensation for accident, whether or not the employer may be to blame, would mean very heavy expense for insurance, which would result in an inevitable reduction of wages. The committee finds that the burden has not been excessive, but at the same time gives warning that it is an increasing burden, and that consequently great care should be taken in amending the act.

One very important recommendation indicates that Great Britain, as well as the United States, is afflicted with the new type of lawyer known as the "ambulance chaser," the lawyer who himself or by his agents solicits clientage from injured persons or their families on a commission basis. Under the act as it stands it is possible for an employee to bring suit, first, under the Employers' Liability act, which is similar to statutes in practice in this country; and then, if it be found that the employee has no case under the Liability act, the Court may award him damages under the Compensation act, deducting the amount of costs which the employer has paid in the first suit. This has been used by unscrupulous lawyers to force terms of settlement. A remedy for this evil suggested in the report of the committee is to give power to the courts to issue a stay of proceedings where suit is threatened or actually commenced at common law or under the Employers' Liability act, on evidence that the workman has an adequate remedy under the Compensation act. The committee also recommends that the employer must receive notice of an accident within six days of its happening unless the Court allows an extension. The law, as it stands, provides that notice must be given "as soon as practicable." It has been found that where there is delay there is fraudulent intent in many cases.

Another important change suggested is with reference to the employment of aged, infirm or maimed persons. An amendment should be made to enable the employer to offer work to such persons without incurring undue risk of paying compensation. The act makes no distinction, and it often happens that where a slight accident would result in only partial disability to an able bodied man it causes total disability to an infirm workman. The committee recommends as a remedy that the employer be given the power to contract with a maimed workman so that only a reduced liability for total disability or death will be paid.

It is recommended that the act be extended to include all workers in shops employing five or more people, to fishermen, seamen, carriers and those engaged in the care of horses and locomotives.

American manufacturers who have studied the Workmen's Compensation acts of other countries generally look upon the system with little favor. Yet while at times the cost may seem great; on the other hand, the risk is often less because the maximum payment in case of total disability or death is less than may be generally expected under the Employers' Liability act, especially if there be some such provision as that suggested by the British commission to prevent a possible dual proceeding with the Compensation act as the last resort. For example, if a boiler should explode and kill or seriously injure a dozen workmen, the damages to the employer under existing American laws might aggregate a sum sufficient to bankrupt many concerns and seriously reduce the net earnings of a great many others—that is, providing that the measure of damages as used by most American juries were applied. But under a Workmen's Compensation act, properly safeguarded, there is no possibility of the tremendous verdicts which are frequently awarded in cases that appeal to the sympathy of jurymen, and in most cases where employees with families or the families themselves are suing juries are apt to depart from the dictates of their better judgment.

The report contains one statement, important in its bearing upon the question of organized labor, that "the act works most unsatisfactorily and is most ineffective where labor is unorganized and the workman is obliged to resort to legal assistance." Practice has proved that there is less litigation under the act where both employers and employees are organized, which may be easily understood, for it becomes a case of organized labor acting under statute laws and standing between its members and lawyers of a class whose advice to clients ignorant of law and legal practice can never be conducive to either their own interests or those of their employers. Doubtless such organizations of labor employ honest lawyers who deal direct with the employer or his counsel.

Vacation Work for Students.

Each succeeding vacation sees more college undergraduates foregoing the pleasures of summer months passed in idleness in order to temporarily enter the employ of manufacturing and other business establishments. The purpose is in many cases to earn money with which to pay the expenses of education, just as it has always been the means of helping young men to work out the ambition to secure a thorough education. But it is more than that to-day. Young men who have no need of such financial assistance, whose parents can furnish all the necessary funds for their maintenance, are showing an inclination to put their long period of summer rest to better account. They seek admittance to establishments where they can learn the practical side of business. Oftentimes they go into the shop and work by the day, generally for very small wages. A fortnight of the three months of vacation may be reserved for rest and pleasure. The average college undergraduate does not work hard enough to make three months' rest a necessary break on the year. Every man needs a vacation, but many young men of from 19 to 23 years consider that it is a good deal better for them to work a part of their summer. They feel that these periods of contact with practical business

will count quite materially when commencement has passed and they are seeking the openings that will shape their later careers. The polytechnic undergraduate usually needs a good deal more vacation than the college man, because the curriculum of the technical school is necessarily a severe one, and by the time examinations are ended the young men need rest and recreation. Yet many, very many of them plunge into work, and if it be manual labor the necessary brain rest may go with it. The incentive generally goes along with the spirit of the day, to get to work and work hard and well.

Capital Seeking Legitimate Fields.

The long list of stock jobbing shipwrecks, with the melancholy exposure of the methods of high finance, has chilled the ardor of investment in "securities," and led capital to seek safer, if less enticing, avenues of investment.

This tendency is illustrated by the fact that Chicago, which once went "stock jobbing mad" and gave real estate the go-by, is now putting its money into land and buildings. August building permits in Chicago call for the construction of 717 buildings, with 20,190 feet frontage, involving an estimated cost of $3,548,280, an increase over the same month a year ago of 169 buildings, 8198 feet frontage and $731,780 in cost. This is the largest record for August in the history of Chicago with two exceptions, and those were during the boom building era just preceding the World's Fair. It is now almost certain that the year 1904 will surpass either 1891 or 1892, the period in which so many millions were expended for World's Fair structures. A comparison of the first eight months of 1903 and 1904 is as follows:

	Buildings.	Frontage.—Feet.	Cost.
1904	4,632	124,971	$26,162,290
1903	4,040	111,176	22,707,400
Gain	592	13,795	$4,454,890

This revival in building is in the face of the fact that common brick, through the actions of a local monopoly, is on an average $3 a thousand higher in price than a year ago, and that because of the constantly increasing restrictions on the day's work by building trades unions it is estimated that it costs from 10 to 15 per cent. more to build a residence or flat building than it did in 1903. The only structures that are considerably cheaper are the huge steel buildings that are fabricated at the shops, the saving in steel being more than enough to offset the increased cost of brick and labor.

Workmen and the English Language.

One of the greatest hardware manufacturers of New Britain, Conn., has found it necessary to make a rule of prohibiting the employment of workmen who cannot speak the English language, and it is said that other Connecticut manufacturers are contemplating similar action. It is easy to realize why such a condition should be imposed in hiring men and women, yet the presence of foreigners with no knowledge of the English language is common enough nowadays, especially where the work is routine and requires little instruction, the operative acting as a part of the machine. But there are serious annoyances which may more than make up for the saving in wages that comes from hiring labor which has not passed through even the first processes of becoming Americanized. Such workmen are more liable to accident. They cannot, even with the assistance of an interpreter, grasp the meaning of the usual warnings to employees given with a view to lessening the dangers incident to mill and factory life. Complaint is made that many foreigners make little effort to learn English, being satisfied to associate only with their fellow countrymen and planning to return to their old homes when they have accumulated sufficient funds. The New Britain rule will have the tendency to instill an ambition to speak the language. In times of abnormal business, when a workman's services are at a premium, it may be necessary to employ immigrants who have had no opportunity or no desire to become familiar with the English tongue. But at present there are men and women enough to fill every available position without putting in newly arrived foreigners. It is likely that if such a rule as that inaugurated at New Britain should become general it would have a very appreciable effect in curtailing immigration. It is safe to say, however, that the rule will not become universal or nearly so, but it is one that is likely to become more and more general as time goes on.

The reported plan of the General Electric Company to connect by wireless telegraph its plants at Schenectady, N. Y., and Lynn, Mass., and possibly that at Pittsfield, Mass., suggests a wide field of usefulness of this form of electric communication. There are a good many companies having plants in various cities and between which a great deal of business has to be transacted daily by telegraph and telephone. The bills for tolls are very large ones, and to save them by the use of wireless telegraphy would be a real economy. In the case of the General Electric Company the Lynn and Schenectady plants are about 185 miles apart, with Pittsfield between them, 140 miles from Lynn and 45 miles from Schenectady. The experiment, if the company places such a system in operation, will be watched with much interest, with special reference to the reliability of wireless telegraphy in all sorts of weathers. If it should prove to be a success it is safe to presume that the system will come into general use for the purpose, although it can never replace the telephone. The wireless telephone, if such a device shall become practical for long distance transmission, would be vastly more useful than the telegraph.

New Wage Scale of Republic Iron & Steel Company.

The Republic Iron & Steel Company, through the Conciliation Board, to which was referred the settlement of the new schedule of wages, effected a settlement last Sunday morning, and as a result 35 plants and furnaces of the company, which were closed down, resumed operations Monday of this week. The company asked for an average reduction of 15 per cent. in wages because of the decreased profit in its business, and the Board of Conciliation effected a settlement on the basis of an average of 10 per cent. reduction. The principal changes in wage scale were as follows:

The base rate of the boiling department for bar iron is reduced from $5 to $4.90 a ton, with 25 cents a ton advance for each 1-10 cent advance on the selling price of 2 cents.

The swarth scale is cut 10 per cent. below the boiling scale.

In the busheling scale the price paid a ton will be $2, while bar iron sells at 1 cent a pound, and 5 cents a ton advance for each increase of 1-10 cent in the selling price.

In the bar and 12-inch mills the following reductions are made in the present wage scale:

	Per cent.
Rolling and catching	11⅛
Heating	10
Roughing	8⅛

Steel, 6 per cent. less than the iron price.

Skelp rates to apply only when 50 per cent. is made in any pay period.

Guide mill prices to be paid on all sizes below 4¼ by 117-10000.

A reduction of 13½ per cent. is agreed to from the

present rate for rollers in the guide mills, 10 per cent. for heaters and 8½ per cent. for roughing and catching.

The decision was reached after a number of sessions, the last of which extended from Saturday evening to Sunday morning.

The American Locomotive Company.

The annual report of the American Locomotive Company for the year ending June 30 last shows gross earnings of $33,068,751, a decrease of $36,974 as compared with the previous year. At the same time expenses were reduced by $647,329, with the result that the net earnings were larger by $610,355. After paying the interest on the bonds and also on miscellaneous outstanding obligations, as well as the dividends on preferred stock, there remains a surplus of $3,675,539.

Following is a summary of operations of the fiscal year ended June 30, 1904, as compared with those of the 12 months ending June 30, 1903:

	1903-4.	1902-3.	Increase.
Gross earnings	$33,068,751	$33,105,724	*$36,974
Manufacturing, maintenance and administrative expenses	27,404,985	28,052,315	*647,329
Net earnings	$5,663,766	$5,053,409	$610,355
Interest on bonds of constituent companies, bills payable &c.	238,226	248,156	*9,930
Profit available for dividend	$5,425,539	$4,805,253	$620,285
Dividend on preferred stock, at 7 per cent.	1,750,000	1,750,000	.....
Surplus	$3,675,539	$3,055,253	$620,285
Extraordinary improvement and betterment fund	1,000,000	.....	1,000,000
Balance to "profit and loss"	$2,675,539	$3,055,253	$379,714

* Decrease.

Following is the condensed general balance sheet as of June 30, 1904:

Assets.

Cost of property		$45,571,704
American Locomotive Company preferred stock		900,000
Richmond Locomotive & Machine Works consolidated bonds		118,000
Locomotive & Machine Company of Montreal, Limited, stock and bonds (part payment)		980,037
Sundry securities		231,482
Cash		2,114,289
Due from railroad companies		5,671,018
Other accounts receivable		1,246,490
Accrued interest		16,846
Material and supplies (verified by actual inventories of the entire stock)		1,428,018
Contract work in course of construction (based upon exact charges as the work proceeded)		1,739,056
American Locomotive common and preferred stock held in trust		200,000
Total		$60,216,944

Liabilities.

Capital stock—Preferred		$25,000,000
Common		25,000,000
		$50,000,000
Bonds of constituent companies		$1,512,500
Current liabilities—		
Accounts payable		$1,804,592
Bills payable		650,000
Unclaimed interest		257
Dividend payable July 21, 1904		437,500
		$2,892,349
Extraordinary improvement and betterment fund		$1,000,000
Profit and loss—		
Surplus, after payment of dividend on preferred stock, July 1, 1903, to June 30, 1904	$3,675,539	
Deduct: "Extraordinary improvement and betterment fund"	1,000,000	
	$2,675,539	
Add: Credit balance June 30, 1903	2,136,556	
		4,812,095
Total		$60,216,944

In his report to the stockholders President A. J. Pitkin says:

The expenses included a depreciation charge of 20 per cent. of the book value of patterns, drawings, templets, iron flasks, formers and dies. There is a further charge of $1,101,299 for additions to property, in adherence to the company's policy in the past. Out of the surplus the directors have created an "extraordinary betterment and improvement fund" of $1,000,000, for the purpose of completing certain radical betterments and additions to property, already under way, which are deemed necessary to the most economical operation of the property as a whole. Additional land, new buildings, machinery and tools, to the value of $1,101,299, have been secured during the year and paid for out of the earnings of the period.

Notable progress has been made in the accumulation of a larger working capital. After deducting $980,037.59 in partial payment of the securities of the Locomotive & Machine Company of Montreal (hereinafter referred to), the convertible cash assets amount to $12,215,720.10 and the current liabilities to $2,892,349.65, leaving a net working capital of $9,323,370.45, as compared with $6,751,713.71 excess of assets on June 30, 1903, and of $4,998,915.93 on June 30, 1902. It will thus be seen that there has been satisfactory development along safe and conservative lines. It is not the practice of the company to manufacture for stock in advance of orders, hence the item in the balance sheet, "contract work in course of construction," represents positive contracts, the work on which is actually under way.

In order to protect the company's important business relations in Canada control of the Locomotive & Machine Company of Montreal, Limited, was acquired on March 31, 1904. The American Locomotive Company owns the entire capital stock and $1,000,000 out of a total issue of $1,500,000 of the first mortgage 4 per cent. bonds of that company. The new locomotive building plant of the company is situated at Longue Pointe, near Montreal, where it owns 68 acres of land.

It is the intention of the directors to broaden the scope of the company's operations as opportunity may offer for so doing with safety. Thus, among other departures of the year, may be mentioned the manufacture, under agreements with the owner of the patents, of the Atlantic steam shovel. The sale of this product and of other manufacturing specialties, including rotary snowplows, high power dredging machinery, small second-hand engines for mining, plantation and contractors' use, is negotiated by the Atlantic Equipment Company, a new corporation the entire capital stock of which is owned by the American Locomotive Company.

During the past year the mechanical and electrical engineers of this company have been in frequent consultation, not only as to the general problem of the possible future application of electric power to steam surface railroads, but also in regard to a specific proposition for an electric locomotive suitable for use in the suburban traffic of one of the great trunk lines. After much study and in co-operation with the General Electric Company, agreements have been entered into for the manufacture of 30 electric locomotives, to be delivered by 1906. The American Locomotive Company will construct the mechanical parts of the locomotives, the General Electric Company supplying all the electrical apparatus.

While much gratified that the financial results of the year have equalled those of the 12 months preceding, when general business conditions were undoubtedly more prosperous, it is proper to say frankly to our stockholders that the company could not hope to maintain unchecked such an exceptional volume of business as that which it has received during the past three years. In common with nearly all business interests the company will doubtless suffer an important contraction in the extent of its operations during the fiscal year upon which it is now entering. All signs point to such a prospective decrease, yet the outlook is by no means of a discouraging character. It is, however, for just such seasons of contraction as that which seems now to be before the company that its officers have earnestly been striving to prepare, and their confidence in the company's future remains unabated.

On September 26 the Electro-Dynamo Company will be established in its new quarters at Avenue A and North street, Bayonne, N. J.

A French View of the English Iron Industry.*—III.

Scotland.

The iron ore deposits of Lanarkshire and Ayrshire are so closely associated with the coal measures that nearly all the Scotch iron works are grouped in this coal basin, which is hardly 30 miles long. It is in the immediate vicinity of Glasgow and the estuary of the Clyde, covered with shops of all kinds and with great shipyards. The blackbands of Lanarkshire and the poor and phosphoric clay ores are practically exhausted, but the blackbands of Ayrshire have retained a certain importance. They are calcined at the mines and are costly. They are not adequate even now for the production of the foundry and forge pig which Scotland consumes in such large quantities, and the greater part of which it now draws from Cleveland. Only one plant, that of Glengarnock, utilizes local ore for the production of basic pig, having started this in 1885. With this exception Scotch steel is almost entirely made by the open hearth method, with Bessemer pig obtained from Spanish ores. Only two undertakings are in an exceptional position so far as ores are concerned. One of them does not make any steel, and the other but very little. These are Baird of Gartsherrie, which supplies its 12 furnaces from its mines in Almeria, receiving from there about 400,000 tons. The second is Coltness, which charges into its nine furnaces Alquife ores obtained under special contracts. They are too powdery and must therefore be briquetted. All the others buy their purer ores, which come chiefly from Bilbao, Santander and Porman, in Cartagena. The Santander ores are sometimes rich, carrying from 57 to 59 per cent. The others rarely go higher than 47 per cent. They are sold in Scotland at 14 to 15 shillings, 50 per cent. base. The transportation from the Clyde to the works varies from a few pence to 2 shillings. Altogether the Scotch steel works have not done enough to assure to themselves a supply of ore. Even beyond this they are obliged, so far as two-thirds of the capacity of their steel furnaces is concerned, to buy and transport their pig iron and their fuel. Even the most important of them are thus situated. These undertakings seem to be relatively concentrated, since the ten divide between them 133 open hearth furnaces.

The blast furnace practice is peculiar. Splint coal is charged direct, the consumption being 1.83 tons per ton of pig iron, the maximum blast pressure being 0.3 to 0.4 kg. per square centimeter, and the production varying between 35 and 45 tons per day. The gases escape from the tunnel head loaded with the products of distillation of the coal. The result has been that there have been added to the furnaces plans for the recovery of these by-products. At first introduced in 1881, the recovery of tar (at the rate of 90 pounds per ton of coal), of sulphate of ammonia (22 pounds) and of benzole (6.5 gallons), represents about 8.5 shillings per ton of pig iron which must be deducted from the cost of manufacture. It is, therefore, a profitable process, which has permitted the Scotch iron industry to take a fresh start. The advantages, however, do not compensate for the inconveniences which are the result of so low a production in the blast furnaces, and, in spite of the profits on the by-products, the cost of pig iron is rather high. The result is that the normal selling price of Scotch pig iron is 7 to 8 shillings above that of Cleveland iron or foundry pig, and from 3 to 3.5 shillings on pure pig iron. Scotland, therefore, depends more and more upon the Cleveland district, while its own export trade in pig iron, at one time flourishing, is diminishing rapidly. The production of Bessemer pig has, it is true, risen from 520,000 tons in 1901 to 702,000 tons in 1902, and 688,000 tons in 1903; but this development is entirely due to the American demand.

The inferiority of Scotland in the matter of pig iron is notable, and, to some extent, justifies the hesitation on the part of steel works to operate blast furnaces. Scotland produces 1,300,000 tons, of which 700,000 tons is Bessemer. One hundred and seventy-five thousand tons of foundry iron go to the foundries of the country, while 325,000 tons are shipped from Scotland, one-half thereof being exported. As against this 525,000 tons are received from Cleveland and additional quantities from the Cumberland district.

In the list of Scotch steel works there are, first of all, two large enterprises—the Steel Company of Scotland, with 28 furnaces, and the Colvilles of Motherwell, with 19 furnaces—both of them producing billets, castings, bars and plates. Then there are the steel works and plate mills of Parkhead, with 15 furnaces, which supply the great ordnance works of William Beardmore, the latter having four furnaces of minor capacity. The Stewart Menzies Company, with nine furnaces, supplies plates and skelp to seven subsidiary works, whose principal specialty is the manufacture of merchant pipe. Then there is the Lanarkshire Steel Company, with 12 furnaces, making chiefly bars and ingots, which, in spite of recent improvements, was forced to stop altogether. Finally there are the Clyde Bridge Plate Mills, with nine furnaces, and three smaller plants. The Glasgow Company, in Wishaw, has four blast furnaces and 12 open hearth furnaces, and the Summerlee Company of Mossend, which closed down completely toward the close of 1903 a plant of 12 open hearth furnaces in order to utilize its seven blast furnaces for the direct sale of pig iron. The 12 open hearth furnaces are all basic lined. The Glengarnock Company, which produces chiefly basic Bessemer steel, operates besides 12 blast furnaces, three of which only were in operation in January of this year. The basic pig is made from local ores carrying 35 per cent. of iron and from hammer scale yielding 60 per cent. The three open hearth furnaces are to be replaced by a Talbot continuous furnace.

It is difficult to judge the equipment of all these steel works. On the one hand it includes open hearth furnaces from 20 to 50 tons, gradually built, as puddling gave way to steel. They are excellent instruments of production, particularly since the adoption of modern gas producers. Cases are cited of 50-ton furnaces which have produced 550 tons in a week. Electric charging machines have scarcely made their appearance, although this gap will probably be soon and largely filled. On the other hand, the rolling mills, which draw their supplies from these furnaces, have all the features of plant recently built or progressively modified. One meets good slabbing trains, well equipped heated soaking pits, and in two of the works even continuous heating furnaces, numerous mechanical improvements in the operation of the trains, the employment of liquid pig wherever it is possible, the rolling of bars in one heat, &c., but also superannuated equipment and, particularly, very rudimentary finishing and shipping equipment. New construction on a large scale has been very rare since the year 1894. A notable case is that of the Lanarkshire Company, which during the years 1899-1901 added three furnaces and six new trains. On the other hand, the Steel Company considers it as remarkable that it spent £140,000 in building in eight years. For an enterprise of this importance, which has, at times, turned over £1,000,000 sterling per annum, this is very small. It will be understood readily that the net profits have always remained very moderate.

As a whole it does not seem that the general organization of the Scotch iron trade, however ingenious it may have been made, conforms to the exigencies of modern industry. The probable life of the splint coals of Lanarkshire was estimated ten years ago at 10 to 20 years, and the effort has been made to utilize coal of minor quality. The working of the furnaces has been slowed up under this plan. Two of the furnaces then undertook to mix 15 to 20 per cent. of coke to the furnace charge. A larger proportion could not be used because it stops the working of the by-product plant. The use of regenerative furnaces makes it possible to make fair coke from the local coals for such an admixture. Still it remains a grave question for the future of Scotland what will be its supply of fuel. The price of splint coal is rising rapidly, and at the present time ranges from 9 shillings to 9 shillings 4 pence at the works, according to quality.

The separation of the steel works from the furnaces and the high cost of manufacture at the latter are causes of inferiority, which in the case of any other district

* Continued from *The Iron Age*, September 1, page 21, and September 8, page 14.

would have long since been regarded as prejudicial. However, the Scotch works supply products so highly wrought, they are in the center of such an area of shops and yards, that until now they have not been called upon to suffer seriously from this state of affairs. As a matter of fact, Scotland does not seem to trouble itself much to make even the slightest changes in its industrial organization. Apparently too large a share of the poor results of recent years is attributed to the crisis in shipbuilding, since the production of steel declined in 1903 to 905,000 tons, as compared with 1,013,000 tons in 1902. It should be noted, however, that besides the 12 Mossend furnaces, which were basic lined, but were almost immediately stopped, there are besides five other basic furnaces in operation and one under construction.

McClintic-Marshall Construction Company.

The McClintic-Marshall Construction Company, with works at Pittsburgh and Pottstown, Pa., is the largest manufacturer and erector of steel bridges and buildings in the United States outside of the American Bridge Company. The Pittsburgh plant is located at Rankin Station, outside the city limits of Pittsburgh, and was built in 1901. The plant is modern in every respect. The plant occupies a site of 13 acres directly across the Monongahela River from the Homestead Steel Works of the Carnegie Steel Company. The stock yard is about 150 feet in width and 1000 feet long, traversed by two electric traveling cranes of 10 and 20 tons capacity. A large stock of material is kept on hand in order to facilitate deliveries. The main building of the shop is 280 feet wide and 500 feet long, equipped with eight traveling cranes, ranging from 5 to 30 tons capacity, which handle the work from the time it enters the shop until it is loaded upon the cars. The punching, shearing, reaming and milling machinery is all electrically driven. The rack and multiple punches are especially designed to do the most accurate work. The reaming outfit consists of 28 electric radial reamers and two traveling gantries, capable of reaming girders 12 feet deep and 125 feet long without moving the girders. The rotary planers and riveting machines are of the finest type. All riveting machines are pneumatic, carrying a pressure of 100 pounds per square inch. The loading of the finished material is done by two locomotive cranes of 10 tons capacity, which load the material into cars on depressed tracks. Girders up to 90 tons can be loaded in the main shop. The machine and blacksmith shops are well equipped to do all classes of work, and the templet shop, a large, well lighted room with maple floor, presents an opportunity to lay out difficult work full size and bore the templets while the frames are thus assembled. The company's general offices are on the first floor of their three-story office building at this plant. The second and third stories are large, well lighted drafting rooms, accommodating 110 draftsmen. Each room contains a fire proof vault and an office for the chief draftsman. The roof is devoted to the use of the blue print department, the equipment consisting of 14 sunlight frames and an electric printing machine.

The Pottstown plant occupies 15 acres of ground between the Pennsylvania and Philadelphia & Reading railroads. The main building is 116 feet wide and 520 feet long. In addition there is a machine shop, blacksmith shop, templet shop, girder shop, power house, &c. The new girder shop is 136 feet wide and 140 feet long, equipped with two 30-ton electric traveling cranes, and is capable of handling the largest girders made. The shearing, punching, reaming, riveting and milling equipment is similar in all respects to that of the Pittsburgh plant; the power used is steam and electricity. The Pottstown office is a three-story building, with general offices on the first floor and drafting department on the second and third floors. Both plants are close to the rolling mills in their respective districts and have excellent railroad facilities. The number of men employed when running full at both plants and in the field is about 2500. The combined capacity of the plants is approximately 7000 tons of finished work per month.

PERSONAL.

Stephen W. Tener, formerly assistant district manager of the American Steel & Wire Company at Pittsburgh, has removed to Cleveland, succeeding the late W. W. Herrick at the head of the pension department of the company.

John H. Early, for many years connected with the sales department of the Cleveland Rolling Mill Company, and more recently with the operating department of the American Steel & Wire Company at Cleveland, Ohio, has removed to New York, taking an important position in the sales department.

F. E. Mesta, for the past two years general manager of the Tennessee Tube Company of Alabama, has resigned and has been made general manager of the plant of the Mesta Machine Company of Pittsburgh. C. J. Mesta, who has been filling the positions of general manager and vice-president of the Mesta Machine Company, will now confine himself to the office of vice-president.

Among the European visitors now in this country is Theodor Beckert, director of the Royal Machine Building School at Breslau.

Among the distinguished members of the Iron and Steel Institute who will attend the American meeting, which begins on October 24, are E. Windsor Richards, E. P. Martin, Sir James Kitson, William Whitwell, R. A. Hadfield, Sir Walter Foster, Benjamin Talbot, A. Sahlin, E. H. Saniter, Sir Lloyd Wise, J. Magery of Liege and R. Price-Williams.

G. B. Le Van, formerly of the Hall furnace, at Sharon, Pa., has been appointed superintendent of the Heckscher furnaces at Swedeland, Pa.

Among the members of the Institution of Civil Engineers of Great Britain who have arrived to attend the coming international congress at St. Louis are Sir William White, former Chief Naval Constructor and Deputy Controller of the British Navy, president of the visiting society; Cuthbert Brereton, who has been connected with many important construction works; Chief Engineer Alexander Ross of the Great Northern Railway, Prof. W. C. Unwin of the Central Technical College of London, Secretary J. H. Tudsbury, H. E. Jones, former chief engineer of the Commercial Gas Company of London; General Manager J. A. F. Aspinall of the Lancashire & Yorkshire Railway, Chief Engineer W. H. Hunter of the Manchester Ship Canal, City Engineer J. A. Brodie of Liverpool, Chief Engineer H. H. Wake of the Sunderland Harbor Board, W. Barrington, P. W. Meik, Joseph Lobley and J. G. Hudson.

C. O. Baker, president of Baker & Co., Incorporated, platinum refiners and manufacturers of Newark, N. J., returned last week from an extended European trip. He reports that the prices of crude platinum have been very materially affected by the drafting of the laborers from the Ural mines, owing to the Russo-Japanese War, and that, notwithstanding recent advances, a further rise in prices seems almost certain.

Henry Pels of Germany, who is head of the firm of Henry Pels & Co. of New York, is at present in this country on a short visit.

R. C. Routledge, formerly of Thomas F. Smith & Co., New York, will take charge of the contract department of the H. W. Johns-Manville Company.

It is announced that the plan of reorganizing the Fore River Ship & Engine Company, Quincy, Mass., has become operative, the necessary preliminaries having been carried out successfully. The plan of reorganization has been published in detail in *The Iron Age*. The business has been incorporated in Massachusetts with a capital stock of $4,800,000.

The New Jersey Zinc Company of New York is considering the question of building a large new plant in the Chicago district. It is probable that it will not only be devoted to the manufacture of spelter and of zinc oxide, but that a rolling mill will also be built.

The Lehigh Foundry Company.

The Lehigh Foundry Company, at Fullerton, Pa., is located in the Lehigh Valley, within sight of the Thomas, Crane, Bethelehem and other iron furnaces which have made this section of country famous for its production of high grade iron. Fullerton is situated almost at the eastern gateway of the anthracite coal field, about 80 miles from New York and 76 miles from Philadelphia, within easy reach of a population of 200,000 people, where skilled labor for generations has been devoted to the production of iron and steel.

The works were planned by F. Conlin, the general manager, the foundry building being 450 feet long, 104 feet wide, and the distance from floor to peak of lantern roof of main building is nearly 60 feet. This hight assures splendid ventilation, and by means of continuous lines of skylights on the roof, as well as side windows, the interior of the foundry is practically as bright as day. The building is also completely equipped with electric lights, and the molders are furnished with small incandescent hand lamps for pit and other work.

The distance from the crane track to the main foundry floor level is 32 feet, which gives plenty of clearance for making any size of castings used in practice. There are two Bement-Niles electric cranes, one of 15 tons and the other of 30 tons capacity, traveling the full length of the main floor of the foundry. In addition to this, there are two portable jib cranes, each of 6 tons capacity, which can be carried and placed for service by the traveling cranes to any point on the main floor. On the side floor there are also two 7½-ton electric traveling cranes, making the lifting and handling facilities over the entire foundry floor space complete.

There are four ovens, having a total capacity of about 30,000 cubic feet. Two of the ovens are 14 feet wide, 32 feet long and 15 feet 6 inches high; one is 20 feet long, 15 feet wide and 20 feet high, and one 18 feet wide, 23 feet long and 13 feet 8 inches high. These ovens are built on the down draft principle, having a stack 36 inches diameter, 60 feet high. The largest cores or molds can be dried as quickly as good practice will permit. By this equipment of ovens, large and heavy loam and dry sand work can be made in the shortest possible time. Frequently it is the lack of oven capacity that retards the progress of important work, and, with this in view, particular attention has been given to this feature.

The foundry is equipped with compressed air for chipping, cleaning, ramming and other work. It has two cupolas, sufficient to melt 100 tons per day; also an air furnace of 16 tons capacity, with which special grades of iron and semisteel are produced. The average tensile strength of a casting from the cupola will range from 18,000 to 20,000 pounds. With the air furnace the range is from 25,000 to 30,000 pounds, and it is possible by special mixture to further increase the tensile strength.

The core house is a brick building 50 x 80 feet. It has two 6-ton traveling cranes, enabling large work to be handled away from the foundry floor. Air blowers, sprayers and pneumatic riddles are in use. The arrangement is such that the cores are made, run into the ovens, and when dried are delivered to the foundry floor with the least possible handling. The pattern shop is a two-story building 40 x 100 feet, and is completely equipped with all modern tools and machines. It is arranged for 20 pattern makers. Generally, in a jobbing foundry, the greatest congestion of work occurs through lack of facilities in the pattern shop. In the machine shop is a 16-foot electric driven boring mill, a 6-foot planer, an 8-foot lathe, a 7-foot radial drill, and a number of smaller machines, all of the most modern and approved type.

While the foundry is of brick and steel construction, the fire fighting facilities have been carefully considered. The works are equipped with a complete water supply and distributing system; the powerful pumps force the water from the Lehigh River to a tower, giving a high pressure service throughout the plant. Some of the larger cored castings are cleaned by hydraulic power.

A traveling gantry is used in the flask yard, and enables the handling of the heaviest flasks with a very small labor cost. Great attention has been paid to the economical handling of raw material. The stock yard is ample. Between each broad gauge railroad track a narrow gauge system of rails connecting with turntables enables the delivery of the material to the foundry without rehandling.

The works are on the Lehigh Valley Railroad, within easy switching of the Central Railroad of New Jersey and Philadelphia & Reading Railway at Allentown and Bethlehem; Delaware, Lackawanna & Western road and Pennsylvania Railroad at Phillipsburg; these points all being within a short haul from the foundry.

The officers of the company are: W. A. Wilbur, president; J. S. Elverson, secretary and treasurer; F. Conlin, general manager; C. B. Flory, superintendent.

The Ideal Steel Company.

A new process of softening steel, which has attracted much attention because of the results produced, is now being utilized by the Ideal Steel Company, which is about to put on the market bars treated and ready for making into tools, punches and dies. By this process the steel—any of the ordinary brands being used—when treated becomes so soft as to effect a most material saving in making the desired tool. After having been softened and cut to the required form the steel is tempered and hardened in the usual manner. It is claimed that the process in no way affects the chemical composition of the metal, but so alters its physical structure as to impart the qualities mentioned. A short time ago a piece of a well-known brand of steel which had been softened by this method was taken to a prominent machine company, which made a punch to cut a five-pointed star ⅞ inch in diameter and unusually sharp at the points. In the making of the punch about 20 per cent. of the cost was saved, owing to the softness of the metal. After having cut it the company tempered it in water. The punch was then forced through German silver 3-32 inch thick and through wrought iron 3-16 inch thick, and as a final test was forced through metal which cut only a part of the star, thus giving an unbalanced pressure tending to bend the punch. It was given a series of tests, not only unusual, but which would not be tried except under conditions when the manufacturer is instructed to give the tool the severest trial possible, and where, as is natural, he passes from one test to another more severe. The tool came out of the last as perfect as when it left the maker's hands. The process is particularly applicable to die sinking, where the hub, being of softened steel, can be made in much less time, while the die, also being softened, can be sunk cold instead of hot, as is now the common practice, thus saving time and labor. The steel being prepared to receive the blow cold, all fractures and flaws are avoided. In handling the steel during the making of any tool it is necessary to perform all operations cold, as the heating of the metal destroys the qualities imparted to it in the softening process. After having been treated the steel can be forged cold, can be twisted or bent in any way, and can finally be tempered as desired.

The company has treated the first ton of steel, and is exhibiting a piece in the softened state 5 inches square, in which are sunk 11 dies, in each of which the most minute lines of the figures show up with great clearness. The treated bars are to be put on the market in 3-foot lengths and various widths and thickness.

The Ideal Steel Company, Arlington, N. J., which was incorporated some months ago with a capital stock of $50,000, has equipped a plant 125 x 300 feet, capable of turning out 10 tons of steel per day. E. C. Dalzell of Belleville, N. J., is president; William McKenzie of Rutherford, N. J., secretary, and James J. McKenzie of Rutherford, N. J., treasurer.

The serious droughts of recent years which have afflicted Maine manufacturers dependent upon water power have resulted in a general movement to install auxiliary steam plants to help out in time of low water. A number of Maine manufacturers are installing power plants, and it is understood that others have the matter under consideration.

OBITUARY.

JAMES L. MURPHY, superintendent of the North & Judd foundry, New Britain, Conn., died last week in Nordheim, Germany. He was for a number of years superintendent of foundries for J. H. Whittemore of Naugatuck, Conn., and assumed the management of the North & Judd plant when Mr. Whittemore took over an interest in that concern.

PHILIP W. MOEN, formerly general manager of the Washburn & Moen Wire Works, Worcester, Mass., and later vice-president of the American Steel & Wire Company, from which post he retired two years ago, died suddenly from apoplexy on September 12, at his summer home at Shrewsbury, Mass., aged 47 years.

D. L. CHESTNUT, assistant to the president of the Western Steel Car & Foundry Company, died last week at Plymouth, England, after landing from an ocean voyage which he had taken for his health. Mr. Chestnut was 30 years old.

EDWARD HUBER, a prominent citizen of Marion, Ohio, died at his home August 20. He was president and chief owner of the Huber Mfg. Company of Marion, the Marion Steam Shovel Company, Marion Malleable Iron Company, the Marion Implement Mfg. Company and the Marion Electric Light Company. He invented the Huber traction engine and the Huber threshing machine and other farm implements.

JOHN S. YOUNG, proprietor and manager of the J. S. Young Machine Company, Allegheny, Pa., and a prominent business man of Pittsburgh, Pa., died September 3, at his home in Haysville, Pa., of heart disease, aged 64 years.

FREDERICK CROSWELL ROWLAND, head of the machinery manufacturing firm of F. C. & A. E. Rowland, New Haven, Conn., died September 8, at his home in that city, aged 60 years. He learned the trade of machinist in the locomotive repair shops of the New York, New Haven & Hartford Railroad Company. Subsequently he entered the service of the Norwalk Iron Works, of which he became the general manager, and later formed the firm of F. C. & A. E. Rowland, manufacturers of hydraulic, marine and general machinery, at New Haven.

JOHN WILKINSON, formerly of the firm of Parkhurst & Wilkinson, heavy hardware jobbers, Chicago, was fatally burned September 7, dying of his injuries three days later. Mr. Wilkinson was 65 years of age, 40 years of which time he lived in Chicago. Previous to his alliance with J. J. Parkhurst Mr. Wilkinson was president and manager of the John Wilkinson Company, a large sporting goods firm. For the last eight years, together with his son, John Wilkinson, Jr., he controlled the Hope Chemical Company.

A New Plant for Building Automobiles.—The R. E. Olds Company, Lansing, Mich., which was recently organized, has selected a site of 20 acres in the southern part of the city, where a large plant will be erected for the manufacture of automobiles. The largest of the buildings, which will be the machine shop, will be 70 x 700 feet, with an office building, 50 x 100 feet, adjoining. On one side of the machine shop and running parallel to it will be three buildings, one 60 x 500 feet, and two 70 x 500 feet each, while on the other side a large testing track and park will be constructed. There will also be several other smaller buildings. All of the structures will be two stories high, of brick, with concrete foundations. Spurs from the tracks of the Lake Shore & Michigan Southern and Grand Trunk railroads, which run through the property, will afford excellent shipping facilities. The contracts for the construction of the buildings have been let and much of the mechanical equipment has been purchased. The plant is expected to be ready for operation early in the year.

The International Harvester Company has closed the Deering, McCormick and Plano plants at Chicago, throwing about 10,000 men out of work. While the statement is made that the plants were closed down because it was necessary to check up inventories and because of a shortage of materials, it is generally understood that the plants were closed in order to open later on, if possible, on a strictly nonunion basis. Unions have had but meager foothold until the last year, during which time considerable strength has developed among certain unions, and it is thought that when the plants do reopen the workmen will be compelled to return as individuals and not as members of unions. This is the second shutdown for the present season, as the plants closed down about August 1 for their annual summer inventories and repairs, starting up some three weeks later. No date is set for resumption of operations.

Production of Coke in 1903.

Slight Decrease in Quantity Offset by Increase in Value.

WASHINGTON, D. C., September 13, 1904.—The annual report of the United States Geological Survey upon the production of coke in 1903, which has just been completed by Edward W. Parker, records a slight decline in the quantity, but a substantial advance in the value of the year's output. There was, also, a very large gain in the number of coke ovens built during the year, and at the beginning of 1904 many more were in course of construction.

The statistics of the manufacture of coke as presented in this report include only that product which is obtained from the distillation or partial combustion of bituminous coal in ovens of the beehive type, or in retort ovens of which the coke product is suitable for furnace and foundry use. The coke obtained as a by-product in the manufacture of illuminating gas and known as "gas house coke" is not considered in this report. Gas house coke is a spongy substance unfit for metallurgical use, and is consumed chiefly as a domestic fuel. Owing, however, to certain changes and developments that have taken place in the manufacture of coke in the last ten years, it is necessary to include in these reports some coke which is not manufactured for strictly metallurgical purposes. When the publication of the annual report, "Mineral Resources of the United States," was begun in 1882, practically all of the coke (except gas house coke) made in the United States was obtained from beehive ovens, the name of the oven being derived from the shape of the combustion chamber, which is similar to that of the conventional beehive.

Increase in By-Product Ovens.

During the last decade, however, there has been a steady and noteworthy increase in the construction of retort or by-product recovery ovens, the coke product of which is a high grade metallurgical fuel, although the coke itself is not in all cases the primary product. In some instances the coke is a secondary product, but cannot be considered as a by-product, like gas house coke. And while considerable quantities of the coke made in by-product ovens are sold for other metallurgical purposes, it is also true that manufacturers of beehive coke are now making a specialty of the preparation of coke for domestic use, and large quantities of this fuel were sold in 1902 to take the place of anthracite coal, made scarce by the great strike of that year. It is impossible to make any separation of the coke sold for domestic use, and as the greater part of the by-product coke made is used for metallurgical purposes, it is considered as coming within the scope of this report, and it is no longer possible to limit the statistics, as formerly, to the production of blast furnace and foundry coke.

The coal consumed in the manufacture of coke in the United States is drawn from six of the seven bituminous coal fields—namely: 1, The Appalachian field, embracing the great coking coal regions of Pennsylvania, Virginia, West Virginia, Ohio, Georgia, Alabama, Tennessee and Eastern Kentucky; 2, the eastern interior field, which includes the coal areas of Illinois, Indiana and Western Kentucky; 3, the western interior field, including Arkansas, Indian Territory and Texas; 5, the Rocky Mountain field, including Colorado, New Mexico, Utah, Montana,

South Dakota and Wyoming; 6, the Pacific Coast field, in which the only coking coals are found in the State of Washington. The coal of the northern interior field lying wholly within Michigan has not so far been used for coke.

A considerable amount of coke is made in States in which there are no coal fields—namely, Massachusetts, New York, New Jersey and Wisconsin. Construction work on a plant of 50 retort ovens was begun during 1903 at West Duluth, Minn. The ovens in Michigan and those recently constructed in Maryland (near Baltimore) are fed with coal from other States. With the exception of the few beehive ovens in Wisconsin, all of the plants outside of the coking coal fields are retort ovens. At the close of 1903 a plant of 80 retort ovens was under construction at Milwaukee.

Production.

The production of coke in 1903 showed a slight reaction from that of the previous year, during which time, because of the continued activity in the iron and steel trade and of the scarcity of anthracite coal, an unprecedented demand was created for coke. Including the production of coke from by-product or retort ovens, the total output in 1903 amounted to 25,262,360 short tons, as against 25,401,730 short tons in 1902. Considering the abnormal conditions which obtained in 1902, the continued large production in 1903 is noteworthy, and the slight decrease in tonnage is negligible. Compared with 1901, when the coke production amounted to 21,795,883 short tons, the output for 1903 shows a normal increase.

Notwithstanding the somewhat smaller quantity of coke made in 1903, as compared with the preceding year, the value of the product showed a substantial gain, increasing from $63,339,167 in 1902 to $66,459,623 in 1903, a gain of $3,120,456, or a little more than 5 per cent. The higher value for the coke product of 1903, as compared with the preceding year, was due to the unusual conditions which existed during the first few months of the year and which were left over as a legacy from 1902. It was not due to any healthful condition of the industry during 1903.

In considering the total value and average price for the entire coke product of the United States as presented in this report, it must be remembered that in many cases the values are arbitrarily fixed. A number of the larger manufacturers operate blast furnaces in connection with their coal mining and coke making business. In such cases the coke product is sometimes charged against the furnace departments at cost, and sometimes at a figure based upon the cost of coal mining and coke making, plus a percentage of profit on these operations. The value is not fixed by the market price. In other cases the value is estimated upon the average prices for coke of a similar quality produced and sold in the immediate vicinity.

Stimulated by the active demand for coke which prevailed in 1902, new construction was energetically carried forward, and during 1903 over 10,000 new ovens were added to those already built. At the close of 1902 the total number of coke ovens in the United States was 69,069. At the close of 1903 the number had increased to 79,187, a gain of 10,118. The number of ovens idle during 1902 was 1945, leaving a total of 67,124 active ovens, which produced 25,401,730 tons of coke, or an average of 378.4 tons per oven. In 1903 the number of ovens idle throughout the year was 1999, leaving a total of 77,188 active ovens, which turned out 25,262,360 tons of coke, or an average of 327.3 tons per oven.

The total number of 77,188 active ovens in 1903 included 1956 by-product ovens, which produced 1,882,394 tons of coke, or an average of 962.4 tons per oven. Deducting the number of by-product ovens from the total number of ovens active in 1903, it appears that there were 75,232 beehive ovens, which produced a total of 23,379,966 tons of coke, or an average of 311 tons each, or less than one-third the tonnage per oven by the by-product ovens operated during the year.

There were under construction at the close of 1902 6275 new ovens, of which 1335, or about 21 per cent., were of the retort or by-product type. The number of completed retort ovens increased from 1165 in 1901 to 1663 in 1902, and to 1956 in 1903. The output from retort ovens has increased from 1,179,900 tons in 1901 to 1,403,588 tons in 1902, and to 1,882,394 tons in 1903. In 1902 5.5 per cent. of the total output was from by-product ovens; in 1903 the by-product coke was 7.4 per cent. of the total.

Details of Production.

The details of the production of coke in 1903 are presented by States and Territories in the following table:

State or Territory.	Establishments.	Ovens built.	Coal used. Short tons.	Coke produced. Short tons.	Value of coke per ton.
Alabama	30	8,764	4,483,942	2,693,497	$2.83
Colorado	16	3,455	1,776,974	1,053,840	2.93
Georgia	2	500	146,086	85,546	4.306
Indian Territory	5	286	110,088	49,818	4.57
Kansas	9	91	30,503	14,194	3.54
Kentucky	7	499	247,950	115,362	2.65
Minnesota	1	0	.....	.....	...
Missouri	2	8	3,004	1,839	3.15
Montana	4	555	82,118	45,107	6.89
New Mexico	2	126	18,613	11,050	2.85
Ohio	8	440	211,473	143,913	3.67
Pennsylvania	212	40,092	23,706,455	15,639,011	2.49
Tennessee	16	2,439	1,001,356	546,875	3.12
Utah	2	504	.....	.....	...
Virginia	16	4,251	1,860,225	1,176,439	2.315
Washington	6	256	73,119	45,623	4.71
West Virginia	136	15,613	4,347,160	2,707,818	2.628
Illinois	5	155			
Indiana	1	36			
Maryland	1	200			
Massachusetts	1	400			
Michigan	2	75	1,306,707	932,428	3.46
New Jersey	1	100			
New York	3	40			
Wisconsin	1	228			
Wyoming	1	74			
Totals	500	79,187			

There were under construction at the close of 1903 1335 new by-product ovens, which number constituted more than 20 per cent. of the total new ovens building at that time.

In order to produce the 1,882,394 tons of coke there were used in the by-product ovens in 1903 2,605,453 short tons of coal, showing a yield of coal in coke of 72.25 per cent., a much larger yield than is or can possibly be obtained in the operation of the beehive ovens. As previously shown, the average yield of coal in coke for all the United States (including the output of by-product ovens) in 1903 was 64 per cent., and this is probably higher than the results actually obtained.

In 1893 the first plant of by-product recovery ovens in the United States was completed at Syracuse, N. Y. At the close of 1903 there were nearly 2000 ovens in operation, the plants being distributed through ten different States. Of the 1335 ovens building at the close of 1903, 250 were distributed among three new States—Illinois, at South Chicago; Minnesota, at West Duluth, and Wisconsin, at Milwaukee. When all of those new ovens are completed, making a total of 3291 by-product ovens, their production, at an average of 1000 tons per oven per year, will be equivalent to 13 per cent. of the total product of the United States in 1903. In 1902 5.5 per cent. of the total production of coke was made in by-product ovens. In 1903 7.4 per cent. of the total was by-product coke.

W. L. C.

The Carnegie Steel Company has installed at its Duquesne Steel Works, at Duquesne, Pa., a new labor saving device that will effect a very large saving in wages formerly paid to laborers employed in unloading cars. It is a self dumping hopper car used for coal, coke and ore. It is said the device will unload cars almost in an instant from either side or bottom of the cars by the pressing of a lever. The new unloading device was tested last week with very satisfactory results. One thousand of these cars will be ordered at once and placed in service for unloading cars at the Duquesne works.

The construction of a large terminal railway station at New Orleans, with every facility for loading and discharging vessels in basins constructed for that purpose, is contemplated. The situation of this depot will be at Chalmette, to the eastward of the city, and a few miles lower down the river. The ground destined for the structures is being surveyed and sounded by a party of engineers, and the plans are under way. The basins will be about 1500 feet in length by 250 in width and 50 feet deep at high water. San Francisco capitalists are back of the project.

The Scherzer Type of Rolling Lift Bridges.

Center pier swing bridges are fundamentally wrong in principle because they occupy the middle and best part of a navigable channel, and retard both railroad and vessel traffic; in many cases absolutely blocking modern vessels. Swing bridges give two inadequate side channels where one adequate center channel is required. If they are single track or double track structures, they must be discarded and removed whenever one or more additional tracks are required. They must be kept narrow so as not to fill and block too much of the channel.

These difficulties are overcome by the modern type of Scherzer rolling lift bridge, which, through improvement and development, is now also more economical in construction than a swing bridge. The advantages of the Scherzer type have been recognized by the engineers of the principal railroad companies and government and municipal engineers at home and abroad, which has led to its rapid and extensive introduction and substitution for swing bridges.

The first bridge of the Scherzer type was completed in 1894, for the Metropolitan Elevated Railroad Company of Chicago. It is a four-track structure, composed of two double track bridges placed side by side, operated either jointly or separately, as desired. This bridge proved so satisfactory that its construction was followed by other railroad bridges larger than any heretofore constructed, notably the following:

The six-track rolling lift bridge for the New York, New Haven & Hartford Railroad Company at Boston, Mass., completed in 1899, and the eight-track bridge for the Pan Handle, Chicago Terminal Transfer and Chicago Junction Railroad companies, Chicago. The double track- double leaf, 275-foot span bridge for the Chicago Terminal Transfer Railroad Company at the entrance to the Grand Central Station, Chicago, the longest span bascule bridge ever built. One single track and one double track bridge were also constructed for the Big Four Railroad Company at Cleveland, Ohio. The latter was erected in its open position, and when completed was closed and placed into service without delaying or diverting railroad traffic. The first double track Scherzer bridge for the Central Railroad Company of New Jersey was placed into service several months ago, and the second is now in process of construction. The four-track rolling lift bridge constructed at Bridgeport, Conn., for the New York, New Haven & Hartford Railroad Company was completed and placed into service early this year. This bridge is composed of two double track bridges, placed side by side and operated singly or jointly, as desired. Somewhat similar four-track bridges are now in process of construction for this company at Cos Cob, Conn., and also at Westport, Conn., and detail plans are now being prepared for a four-track Scherzer bridge for the same company to span the navigable channel of the Housatonic River. These new bridges replace and supersede double track swing bridges and form a part of the very extensive improvements of the New York, New Haven & Hartford Railroad Company, designed to handle expeditiously and safely its greatly increasing traffic.

A notable Scherzer bridge now near completion is being built for the Newburgh & South Shore Railway Company across the Cuyahoga River at Cleveland, Ohio. It is a double track, single leaf structure, having a span of 160 feet from center to center of bearings, making it the longest single leaf bridge of this type yet constructed. It is designed to carry the heaviest railroad traffic, and furnishes a clear channel wide enough for the rapid passage of the largest modern lake vessels.

More than 50 other Scherzer rolling lift bridges have been constructed or are in process of construction in various parts of the world for railroad, street railway and highway traffic, many of the highway bridges being of especially large span, ranging from 170 to 216 feet clear.

Among the Scherzer bridges being constructed in Europe are a combined railroad and highway bridge for the Southeastern & Chatham Railway Company across the Swale River, England, and a railroad bridge for the Fishguard & Rosslare Railways & Harbors Company across the Suir River, Ireland. The detail plans for these bridges were furnished to Sir Benjamin Baker, the distinguished engineer of the great Forth Bridge, Scotland. Other noteworthy foreign installations are a three-track railroad bridge for the Dutch State Railways across the Spaarne River at Harlem, Holland, and a very long and wide highway bridge across the Ekaterinhofka River, St. Petersburg, Russia. This latter bridge forms the beginning of very extensive internal harbor improvements under way for the city of St. Petersburg, Russia.

If the Société Electromotion has accomplished what is credited to it by the United States Consul at Rouen, France, a very great stride has been taken in the operation of the electric automobile. According to this report a system has been obtained by which the motors and the wheels are one and the same, running together at the same speed and without any intermediary of chain or gearing, the motors receiving their power direct from the accumulators. In other words, the motor runs at a speed so extremely slow as to indicate almost an entire absence of power when measured according to the accepted notions of electric drive. It is stated that five speeds, varying from 4½ to 19 miles an hour, have been obtained in the experimental carriage. The wheels look clumsy, but, on the other hand, the body of the vehicle is built low, no room being necessary underneath it for the motors. Such an electrical equipment would mean a saving of a good deal of power because of the absence of intermediary transmission and a saving in repairs of intermediate parts. Noiselessness is also claimed. Details of the motor and accumulators are lacking. If the Société Electromotion has succeeded as stated, the invention will be felt much farther than in the field of the automobile. An electric car thus equipped would be practically noiseless. The application of motors in driving machinery would be less expensive. This is providing that the cost of electricity thus applied is no greater than under the present practice of electric drive. At present too little has been given to the public to afford any serious comparison.

The Waipori Falls Electric Power Company of Dunedin, New Zealand, is installing a plant consisting of two General Electric generators of 1000 kilowatts each, at a speed of 400 revolutions per minute, each being direct-connected between a pair of Pelton wheels of 1000 horsepower each. The effective head available is 665 feet, the water being led to the wheels through a penstock 1825 feet long, and varying in diameter from 36 to 42 inches. At the lower end this penstock has a thickness of 1½ inches. The nozzles are of the combination needle and deflecting type, in order to obtain the greatest possible economy under a wide range of loads.

In the United States Circuit Court, at Pittsburgh, on Monday, September 12, an opinion was handed down in the case of the National Tube Company against the Spang-Chalfant Company for an alleged infringement of a patent welding machine. The court dismissed the bill. The court holds that while the same work is done by the machines of the defendant company, the mechanism differs, and that this takes the case out of the monopoly of the patent of the plaintiff company.

The Iron Clad Mfg. Company, New York, is desirous of having contractors send in estimates on the construction of the two new buildings which the company is to erect at its plant in Brooklyn. There will be a five-story fire proof warehouse, 100 x 125 feet, of steel and brick, and a new steel tin house for the tinning department, 110 x 125 feet and 25 feet high. Plans for the buildings will be furnished by the Purchasing Department, 186 Cook street, Brooklyn.

The United Coke & Gas Company of Sharon, Pa., a subsidiary interest of the United States Steel Corporation, has voluntarily increased the wages of its employees at South Sharon 12 per cent. The wages are now the same as before the cut made last November.

MANUFACTURING.

Iron and Steel.

At a meeting of the Board of Directors of the Youngstown Iron Sheet & Tube Company, Youngstown, held last week, it was definitely decided to build a lap weld tube mill capable of rolling lap weld pipe up to 16 inches in diameter. Plans for this tube mill have been drawn by S. V. Huber & Co., Ferguson Building, Pittsburgh, who are consulting engineers for the Youngstown Iron Sheet & Tube Company.

The sheet mill of the Lalance & Grosjean Company at Harrisburg, Pa., will be transformed into a tin mill.

For the first time in a year the Harrisburg (Pa.) Pipe & Pipe Bending Works has been closed for a week on account of slack business. The company has been one of the busiest and most prosperous iron manufacturers in Central Pennsylvania. The management is considering the advisability of adding another set of rolls to the new rolling mill, and it is probable that within a very few years a blast furnace will be erected, which would make the works entirely independent of outside concerns.

No. 2 blast furnace of the Pennsylvania Steel Company, at Lebanon, Pa., broke its record for production last week by turning out 403 tons of No. 1 iron in 24 hours. The furnace is an 80-foot stack. The company's No. 3 furnace, at Steelton, is ready for blast after a year of idleness for repairs.

At a meeting of the creditors of the United Sheet & Tin Plate Company, held at Marietta, Ohio, on September 8, the trustee made reports of the assets of the various plants. The plants at Byesville, Newark, Newcomerstown, Marietta, 82 lots at Marietta and 44 lots at Newcomerstown were appraised at $256,779, and the personal property at Marietta at $2102. The creditors decided to sell some personal property and remove all Newark machinery to Newcomerstown. They deferred the sale of real estate to a future meeting.

No. 3 blast furnace of the National Tube Company, at Lorain, Ohio, was blown in last week. The new furnace is 22 x 85 feet and is equipped with four copper fire box stoves 21 x 100 feet. Ground for this furnace was broken on April 20, 1903. The company has another stack, No. 4, under way at Lorain, which will be a duplicate of No. 3 just blown in. No. 4 is expected to be ready for blast in October or November, and each stack will have a daily capacity of about 500 tons.

The Shenango Works of the American Sheet & Tin Plate Company, at New Castle, Pa., were placed in full operation on Monday, September 12. This plant contains 42 sets of tin and terne plates and has a weekly capacity of 30,000 boxes.

The Jones & Laughlin Steel Company, Pittsburgh, has abandoned for the present its intention of putting in mills to roll steel rails. The site that was intended for the rail mill is now being utilized for the building of additional soaking pits for the Bessemer and open hearth steel plants.

On Tuesday, September 13, the No. 3 furnace of the Carnegie Steel Company, at Clairton, Pa., was started up. This stack was nearly completed at the time the Clairton Steel Company was sold to the United States Steel Corporation, but had never been operated by the Clairton Steel Company. The stack is 85 x 21 feet and is equipped with four Massicks & Crooks hot blast stoves, each 95 x 21 feet in size. The three stacks are duplicates of each other and have a total daily capacity of about 1200 tons.

The rolling mill department of the Gibraltar Iron Works, Reading, Pa., which has been idle for two months, has resumed operation.

The new blast furnace plant of the Buffalo & Susquehanna Iron Company, Buffalo, N. Y., is about completed, and will be put in operation probably within the next few weeks.

General Machinery.

The Southern Electric & Mfg. Company, recently incorporated at Anniston, Ala., will erect a factory and equip it with a general line of machinery such as is used in a first-class machine shop, plating plant and brass foundry. The machinery will be driven by an alternating current electric motor.

The Rice & Baldwin Electric Company, Hartford, Conn., has formed a copartnership with B. F. Goethner, under the name of the Hartford Electric Machine & Repair Company, and the repair department of the Rice & Baldwin Company has been transferred to the new firm.

The Northwestern Mfg. Company, recently incorporated at Milwaukee, Wis., has purchased the plant of the Browning Mfg. Company of that city, located at Clinton and Madison streets. The new company will continue the manufacture of motors, dynamos and small machinery.

The United States Register Company, Limited, Battle Creek, Mich., is in the market for a large double acting drawing press with which to press steel register fronts, and also for a 50-light electic dynamo. The factory building, which the company recently purchased, was pretty well furnished with power and machinery equipment, though it is possible that later developments may bring to light additional requirements.

The Virginia Foundry & Machine Company, Eveleth, Minn., expects to erect new buildings next spring and add new machinery to its present equipment. The company in the meantime solicits price-lists and catalogues on such machinery as would naturally be required in its business.

The Standard Machinery Company, builder of machinery for saw mills, planing mills, wood yards, coffin factories, &c., Chattanooga, Tenn., has recently added an electrical department, and is now prepared to handle all stationary work, including large generators and arc machines, and is equipped for rewinding, rebuilding and reshafting railway armatures and for furnishing all types of field coils. F. E. Ward, an armature winder, formerly with the Brush Electrical Company, Cleveland, Ohio, and the English Electric & Mfg. Company, Bristol, Eng., has charge of this department.

The Battle Creek Iron Works, Battle Creek, Mich., has reincorporated, canceling all promotion and watered stock, and now has a capitalization of $100,000, instead of $600,000, as formerly. The company is seeking consolidation with some other iron industry, and is willing to put in its plant, valued at $100,000, and $10,000 in addition. The company's plant has been shut down for four months, but will be started as soon as a consolidation can be effected.

The Aultman & Taylor Machinery Company, Mansfield, Ohio, is erecting a large factory addition.

The Addresso-Printograph Company, Elyria, Ohio, is erecting a foundry and machine shop for the production of a number of office specialties, including an adding machine, a coin changer and an automatic addressing machine. R. Runyan is secretary.

W. C. Garstang, superintendent of motive power of the Big Four Railroad, is preparing preliminary plans for new shops for the company at Springfield, Ohio. The plans provide for a car shop, paint shop, boiler shop and machine shop.

P. H. Routzahn, Garfield, Wash., is in the market for a single spindle shaper and friezer.

The Mesta Machine Company, Pittsburgh, with works at West Homestead, has recently entered some large orders for rolling mill machinery and is operating its plant to nearly full capacity. Among contracts recently booked by this concern is a 72-inch plate mill with 36 x 60 inch Corliss engine, to be installed for the Allegheny Steel & Iron Company, at Avenue, Pa.; also a 26-inch sheet mill with 34 x 60 inch Corliss engine for the Interstate Steel Company, at Avenue, Pa., and a 20-inch plate mill with 26 x 42 inch piston valve engine for Brown & Co., Incorporated, of the Wayne Iron & Steel Company, Pittsburgh.

The new Minnesota State Capitol, at St. Paul, which is nearly completed, and which contains about 4,000,000 cubic feet of contents, is heated and ventilated by the fan system of forced air circulation, installed by the B. F. Sturtevant Company, Hyde Park, Mass. The heating and ventilating apparatus is grouped at five points, each apparatus consisting of a 9 x 4½ foot electrically driven Sturtevant steel plate fan, the combined normal capacity of which is 225,000 cubic feet of air per minute, and a Sturtevant heater of ample capacity. These apparatus are operated in connection with five ventilating fans, exhausting air from the various rooms. The boiler plant consists of four water tube boilers built by the Erie City Iron Works, draft for which is supplied by two 7-foot Sturtevant induced draft fans, driven by direct connected Sturtevant engines. These induced draft fans are so arranged that they may or may not be used with the economizers, and have a capacity to deliver 16,000 cubic feet of air at 60 degrees, or 33,000 cubic feet if the gases of combustion are at 400 degrees, allowing 18 pounds of air per pound of coal.

The Detroit, Ypsilanti, Ann Arbor & Jackson Electric Railway contemplates building a large wood working plant at Ypsilanti, Mich., completely equipping it with machinery and tools for repairing and refitting of cars and for new construction.

Owing to the purchase of the present plant of the Preble Machine Works, South Chicago, Ill., by the South Park Commissioners, and the fact that the company is forced to vacate immediately, it is establishing temporary quarters at Seventy-fourth street and the Illinois Central tracks, in Grand Crossing, which the company will occupy until the completion of its new plant at 106th street and Indianapolis avenue. Regardless of this inconvenience, the company will make every effort to keep in continuous operation and use all means possible to give prompt attention and delivery to all orders. It is expected that the new plant, which will be modern in every respect, will be in operation by November 1.

Through the law offices of Griggs, Baldwin & Baldwin, 27 Pine street, New York, the Globe Pneumatic Tool Company has been incorporated, with a capital stock of $100,000, for the manufacture of a patented pneumatic tool. No particulars are available at the present time.

Quimby & Hilliker, Lynn, Mass., have bought the rights of the David Knox heirs in the long established business of making shoe and leather machinery. The firm has a completely equipped plant with steam power.

The Blakeslee Drop Forging Company, Plantsville, Conn., manufacturer of carriage and special forgings, has recently added several new drops to its equipment and generally in-

creased facilities. It is stated that the business of this concern for the present season has been larger than in any similar period for a number of years.

The Ingle Machine Company, Rochester, N. Y., recently organized, has purchased and succeeded to the business of C. J. Palmer & Co. and will continue the manufacture of special machinery.

The McKinnon Mfg. Company, Bay City, Mich., is furnishing a brick hardening cylinder, 6 feet in diameter and 62 feet long, designed for 150 pounds working pressure, for use in a large sand-lime brick plant in Denver, Col.

The Keagy & Lear Machine Company, Coshocton, Ohio, has just completed a new machine shop, 60 x 105 feet, of brick, part of which is two stories high. The shop adjoins the axle shop and foundry, and was made necessary by the increased demand for the company's special machinery.

The item published in these columns September 8 concerning the purchase of the East hammer shop of the Eastern Forge Company, at Nashua, N. H., by Albert Shield, was somewhat misleading, as it gave the impression that the entire plant of the Eastern Forge Company had been sold. This, of course, is erroneous. The Eastern Forge Company has five buildings at its Nashua works—three forge shops, a blacksmith shop and a machine shop. Having concentrated the tools and machinery in the other buildings, the building known as the East hammer shop, which is detached from the others, was abandoned some time ago. The company finally offered this building and 44,387 square feet of land at auction, both of which were purchased by Albert Shield.

The partnership lately subsisting between Daniel M. Curry and Forbes H. Vannan, at Danville, Pa., under the firm name of Curry & Vannan, proprietors Mahoning Foundry & Machine Shops, has been dissolved by mutual consent, Mr. Vannan retiring. The business will be continued by Daniel M. Curry.

Power Plant Equipment.

Contract for the complete stone crushing plant, bids for which were advertised by the House of Correction, Chicago, was secured by the Allis-Chalmers Company. The contract includes engine, boilers and other machinery and was mentioned in the Chicago Machinery Report in *The Iron Age* for August 25.

The Westinghouse Electric & Mfg. Company, Pittsburgh, has received a contract for the engines, generators, stokers and power plant machinery for the warehouses of the Pittsburgh Terminal & Warehouse Company, now being erected on the South Side, Pittsburgh. This is one of the largest contracts for power plant equipment placed in the Pittsburgh district for some time.

The following contracts have just been closed for the equipment of the municipal electric light plant at Columbus, Ohio: One 300 horse-power horizontal water tube boiler, Babcock & Wilcox Company, Pittsburgh, Pa.; one stoker and engine of sufficient capacity to drive this and additional stokers already in place, Westinghouse Machine Company, Pittsburgh, Pa.

A large power plant is being erected for the reformatory at Green Bay, Wis. For the last few months the boy inmates have been engaged in making the brick, which will also be laid by them. Five double batteries of boilers will be installed in the plant. All the electric wiring, plumbing and fitting will be done by the boys, who have been receiving instruction in these branches.

The Lincoln Ice & Cold Storage Company, Lincoln, Neb., expects to erect a storage plant of about 350,000 cubic feet capacity, and will require dynamos, electric pumps and elevators.

Dodge & Day, engineers, Philadelphia, Pa., have been commissioned by Alexander Bros. to take charge of the electrical installations in the property recently acquired by them at 406 North Third street, Philadelphia, Pa. A generator will be required, several motors, switchboard, line shafting, wiring, &c. Other commissions of the firm are the purchase and installation of a night set for the new plant of the Jeanesville Iron Works Company, Hazleton, Pa., and the running of a transmission line to Jeanesville (a distance of 2 miles), to furnish illumination for the town and residences; heating system for residence of James C. Haydon, Jeanesville, Pa.; automobile garage and electrical equipment thereof for Link-Belt Engineering Company, Nicetown, Pa. Specifications on these latter are not ready yet.

The Kiddy Boiler Works, Company, Canton, Ohio, is preparing to erect a new plant and will probably decide to remain in Canton, although propositions have been made by other cities. It is the intention to erect a building, 60 x 250 feet, and three stories high, with a wing 60 x 80 feet, for a foundry. A cupola having a capacity of 15 tons per day will be erected. The company will manufacture the Kiddy-Lloyd water tube boiler, the Lisbae valve, the Lloyd-Kiddy hot water heater, and the Lisbae shears for tin mill work. It will also cover the entire range of boiler and sheet iron work and general boiler repair work. The company has been reorganized with $60,000 capital stock, with J. S. Kiddy, general manager; J. A. Litchy, secretary-treasurer; E. A. Lloyd, superintendent, and A. J. Lisbae, mechanical engineer.

There is no truth in the report that the Bessemer Gas Engine Company, Grove City, Pa., intends to move its plant to Muncie, Ind., as the company is fully satisfied with the present location, where it is erecting an additional building, 100 x 200 feet, of steel and cement, which will enable it to double the present output. The recent opening of extensive oil fields around Muncie has created quite a demand for the Bessemer gas engines for oil well pumping, and the company is considering the advisability of opening a branch shop in that city, where it now has a warehouse and office with a local representative. The company already has branch shops at Lima, Ohio; Montpelier and Marion, Ind., and Independence and Chanute, Kan., with warehouses at various points in the Kansas and Indian Territory oil fields.

Foundries.

The Electric Steel Casting Company, Matthews, Ind., has reorganized, W. K. Gore, P. Angsten, P. A. Hughes and G. Rinebolt, former stockholders of the company, having transferred their holdings to the new company. The company's plant will be in full working order about the last of September.

Harkins & Mahern, proprietors of the Berlin Iron & Brass Foundry Company, Berlin, N. H., are building an addition to their plant, 40 x 50 feet, which will be equipped with new machinery. The first floor will be fitted up as a machine shop and the second floor as a pattern shop and wood working department. The basement will be used for storage.

The Cast Steel Draft Rigging Company has incorporated, with a capital stock of $100,000, to hold a patent on cast steel draw pockets. The device will be made for the new company by the Commonwealth Steel Company, St. Louis, Mo. Clarence H. Howard and Oliver T. Ledford of St. Louis are among the incorporators.

The Niagara Falls Brass Works has been incorporated at Niagara Falls, N. Y., with a capital of $20,000, and will make brass, bronze and aluminum castings. A temporary plant will be established on Whitney avenue and new building erected later. John Lebherz, formerly with the Frick works at Waynesboro, Pa., will be at the head of the new concern.

The Cast-Thread Fitting & Foundry Company, Seneca Falls, N. Y., which was recently incorporated with a capital stock of $250,000, has acquired the business and plant of the Gleason, Bailey & Sciple Mfg. Company, and will continue the manufacture of cast iron threaded and flanged fittings for steam, gas and water. In tests recently made on a line of these fittings, where the joints were made up without the use of any joint compound, a hydraulic pressure of 900 pounds to the square inch was obtained without any indication of breaking down. The company is now installing an Ingersoll-Sergeant air compressor and Tabor molding machines. K. E. Sullivan is secretary.

Bridges and Buildings.

Williams Bros. & Morse, Cleveland, Ohio, have the contract for the erection of a bridge for the Big Four Railroad at Lawrenceburg, Ind., which will approximate $15,000.

The Portage County Commissioners and the Northern Ohio Traction & Light Company, Akron, Ohio, will build a $30,000 overhead highway and electric railway bridge spanning the Baltimore & Ohio Railway at Breakneck Creek, on the Kent-Ravenna road.

The County Commissioners of Seneca County, at Tiffin, Ohio, will call for bids for the erection over the Sandusky River, of an iron bridge with a span of 250 feet.

Fires.

The plant of the Superior Machine Company, Bowling Green, Ohio, was destroyed by fire a few days ago, entailing a loss of about $7000. The company manufactures farm implements and oil well specialities. The company is taking immediate steps to rebuild.

Hardware.

H. D. Phelps, Ansonia, Conn., has begun the erection of a new brass foundry and finishing shop on Beaver street. The building will be of brick, 35 x 80 feet. The foundry will be large enough to accommodate about three times the force that Mr. Phelps has employed for several years past at his Main street establishment. He intends to make a specialty of finishing brass work for the hardware and kindred trades, and will be able to do polishing and plating of all kinds, as well as making castings.

The Fitchburg File Company, Fitchburg, Mass., has moved its plant into a new building recently completed on the Intervale road, in that city. The new main building is 40 x 350 feet, one story high. In addition, there is a boiler house, 40 x 50 feet, and engine house 30 x 40 feet, the company using the engine formerly owned by the electric light station there, in connection with a 200 horse-power boiler. The forging and annealing room is 40 x 60 feet, and contains the latest and most approved furnaces, next to which is the cutting and grinding room, which is being specially fitted for the work to be done. The grinding pits are all cemented, as are all the floors, except that of the office. The cutting and grinding room is 40 x 110 feet, and the stock room, 40 x 40 feet, is in the center of the building. Then comes the machine department, 40 x 98 feet, and a hack saw department adjoining.

The new plant of the Simplex Washing Machine Company, in the suburbs of Davenport, Iowa, was partially destroyed by

fire August 24. The factory was so located that an adequate supply of water was not available for the use of the Davenport fire department, who were compelled to see the works destroyed without being able to save more than a minor part by the use of buckets. The first test of the new plant was made only the day before. The loss is variously estimated at from $8000 to $12,000, partially insured.

The contract for steel equipment for the building of the Registries of Deeds and Probate and Probate Court Room of Norfolk County, Dedham, Mass., has been awarded to the Berger Mfg. Company, Canton, Ohio. The specifications call for steel record cases, plan cases, high tables, sitting tables, counters, bronze grilles, combination cases, typewriter desks, comparing desks, recording desks, flat top desks, roll top desks, judge's desk, witness stand, sheriff's desk, wardrobes and numerous document file cases. Complete steel equipment was also recently installed by the Berger Company for the Bureau of Census, Department of Commerce, Washington, D. C.; the Law and General libraries in the State House at Trenton, N. J.; the Carnegie Library at Alliance, Ohio, and the Arcade Market at Dayton, Ohio.

P. & F. Corbin, New Britain, Conn., are erecting a new annealing kiln building.

The Liberty Mfg. Company, Waterbury, Conn., has been incorporated under Connecticut laws to manufacture portable gas lamps, fixtures and brass novelties. F. P. Noera of the Noera Mfg. Company is president and A. W. Nichols, secretary and treasurer.

The name of the Metal Goods Mfg. Company, Bridgeport, Conn., has been changed to the Metal Ware Mfg. Company, because of the existence of a charter issued to another company some years ago.

The Riley & Beckley Mfg. Company, New Britain, Conn., has been incorporated in Connecticut to manufacture wood fillers and coloring substances for the adornment and preservation of wood. H. L. Riley of Hartford is president, F. S. Beckley of New Britain, secretary and treasurer, and they, together with H. H. Eggleston of Bankhamsted, constitute the Board of Directors.

The Manchester Fence Company has recently been organized at Manchester, Iowa. The company will manufacture portable corn cribs and slate fencing. A small factory is now being erected.

The Hafner Mfg. Company, builder of doors, blinds, glazed windows, &c., St. Louis, Mo., has the contract, amounting to $22,500, for furnishing all the mill work for the new $1,000,000 machine shops of the Missouri Pacific Railway Company now being erected at Sedalia, Mo. This is stated to be one of the largest contracts ever entered into by a St. Louis sash and door house, and, in fact, one of the largest of the kind ever secured in the United States.

The Keystone Company, maker of agricultural implements, Sterling, Ill., has entered the harvest fields of the Northwest with a new self binding harvester, for which strong claims are made. The Keystone Company is composed of E. K. Butler, for years general manager of the McCormick Reaper Works, Chicago; H. B. Utley, who was superintendent of the same plant for a long term of years, and Edward A. Johnston, until recently also an official of the McCormick works. Something less than two years ago Messrs. Butler and Utley bought the Keystone plant, and at once took steps to add the manufacture of a mower to the line already established. The mower was successfully launched, and now the self binding harvester is added to the line. The addition of the self binding harvester to the line manufactured by the company will necessitate the purchase on the part of that company of many lines of iron and steel and other goods of which it has not been previously a buyer.

The Kokomo Nail & Brad Company, Kokomo, Ind., is enlarging its nail department so as to produce 10 tons per day more than at present. Walton & Macke of Kokomo have the contract for supplying the machines.

The Queen Incubator Company has been organized at Hastings, Neb., to manufacture incubators. The officers of the company are: F. M. Waller, president; J. A. Gardiner, treasurer, and Anna L. Pinkerton, secretary.

Patten & Stafford, Canastota, N. Y., have been succeeded by the Patten & Stafford Company, incorporated under the laws of New York, which will continue the manufacture of the New York Champion wheel rakes and barrows, in addition to other implements which they expect to add to their line of products. The capital stock of the company is $50,000, paid in, the officers being as follows: William H. Patten, president; Milton De Lano, vice-president; E. C. Milburn, secretary, and E. L. Mason, treasurer. Mr. Stafford has disposed of his interest in the business. Mr. Patten was the senior member of the former firm, and was the inventor and patentee of the rakes and harrows manufactured by them. Messrs. Mason and Milburn were connected with the firm as employees for upward of 20 years.

Miscellaneous.

The Peacock Iron Works, Selma, Ala., state that they have recently secured the contract from the Government for a number of side dumping cars for use at the Brooklyn Navy Yard. A number of additional contracts have been secured for cars to go to Southern and Southeastern States.

The Hart & Cooley Mfg. Company, New Britain, Conn., is to erect two one-story factory buildings, 50 x 104 feet and 30 x 67 feet, respectively. They will be devoted to manufacturing purposes, the increase being necessary because of the growth of the business.

The Arlington Mfg. Company, Canton, Ohio, paint manufacturer, is erecting a new factory building, including a power house.

The St. Louis Car Company, St. Louis, Mo., proposes adding the automobile business to its line, but is not yet ready to make public details of its plans.

The Inman-Colvin Mfg. Company, Toledo, has been incorporated with $25,000 capital stock and is erecting a building and purchasing machinery for the production of concrete blocks and building material. John H. Inman, I. Inman and Silas S. Colvin of Pemberville, Ohio; Fred W. Siebert of Toledo and George Hugill of Akron, Ohio, are interested.

The Evansville Metal Bed Company, Evansville, Ind., has in course of erection a building for the manufacture of iron beds. This building is 100 x 360 feet, 100 feet of its length being two stories high. The company has not decided upon equipment as yet, but will need a new engine, two elevators and other machinery, such as shapers, and possibly lathes.

The Keystone Joint Fastener Company, Erie, Pa., is moving into larger quarters on account of increased business.

Charles Marks of Erie has purchased for $3000 from J. T. McMurty of Conneaut, Pa., the latter's patent for an appliance for the holding fast of nuts on bolts used with fish plates in joining rails on steam or electric roads. The wire is fastened to two of the nuts so that neither can turn. In electric lines this lock answers the purpose of a bonding wire.

The Morgan Spring Company, Worcester, Mass., is to erect immediately a new building, 72 x 115 feet, three stories and basement. The additional space will be devoted to general manufacturing, in part replacing quarters now occupied for one department in another part of the city, and in part a general increase of manufacturing capacity.

In addition to the contract for 1000 all steel gondola cars recently placed by the Baltimore & Ohio Railroad with the Standard Steel Car Company of Pittsburgh, the same road has placed an order for 250 refrigerator cars with the South Baltimore Car & Foundry Company.

The H. C. Frick Coke Company is rebuilding 350 coke ovens at Larimer, just outside the Connellsville region. At one time it was contemplated to abandon these ovens, but it has recently been decided to put them in good shape, and they will probably be started up again before long.

The Bennington Typewriter Company has been organized and proposes to build a plant at Donora, Pa., for the manufacture of typewriters.

The Excelsior Brass Works, Reading Pa., has moved into its new plant at Tulpehocken & Lebanon Valley Railroad, which has been equipped with modern machinery. The company has established agencies in New York and Chicago.

The Webster system of steam circulation, manufactured by Warren Webster & Co., Camden, N. J., will be installed in the new department stores of John Wanamaker in Philadelphia and New York. This system has been used in the old store in Philadelphia for the past six years and has given perfect satisfaction.

The Cable Nelson Piano Company, Chicago, has bought a tract of land at South Haven, Mich., upon which it will erect a factory shortly. Details of the size and power equipment are not yet forthcoming. Several other organ and piano manufacturers have removed from Chicago, the reason in each case being that it is impossible to compete with manufacturers in other cities and pay the necessary tribute to union labor in Chicago.

The M. H. Reynolds Steel Safe & Mfg. Company is a new industry for Spokane, Wash. The company will manufacture a line of burglar and fire proof safes, vaults, jail cells, chemical fire engines and other iron and steel specialties. M. H. Reynolds, the president of the company, states that he has invented several new and unique features, which will be incorporated in the product of his company.

The Walter A. Zelnicker Supply Company, St. Louis, has established new sales offices in Denver, Col., located at 1711 Tremont street, and in New York at 45 Dey street. The company now maintains branches in Mobile, New Orleans, Seattle, and sales offices in Houston, Denver and New York. The company's rail yard and warehouse is located in East St. Louis, Ill., and factory at New Madison, Ohio, where it manufactures the "double clutch" car mover.

The Iron and Metal Trades

The all absorbing question whether the recent open reduction in the prices of finished materials has stimulated serious buying cannot be answered definitely as yet. With due reserve, the statement may be made that thus far the indications are not particularly favorable. There has certainly not been any rush of buying.

From all accounts, current tonnage in the Steel trade is good. A clear indication of this is furnished by the fact that the independent mills are taking their purchases of raw material right along, with few insignificant exceptions, and that the United States Steel Corporation has in blast close upon 80 per cent. of its furnace capacity, including a number of new stacks. During the whole of the year the policy of the Corporation has been to adjust the Pig Iron production very closely to the Steel requirements, so that the Pig Iron output is a very accurate measure of the deliveries of material marketed.

Our recent blast furnace returns reflect the fact that foundry industries, too, are consuming at an increased rate. Then the report of the Bessemer Furnace Association shows a reduction of idle capacity during August of 13 per cent.

So much for the current consumption. The only point which is raised is whether the larger volume of work really reflects the business taken before the recent disturbances in the Steel trade took place or not.

Conferences are being held among Steel Billet manufacturers, but up to this writing no meeting has yet been called to take action. That a reduction in prices will be made is conceded on all sides, but the exact figure has not been settled. It seems to be the consensus of opinion that a larger differential between Billets and Sheet Bars will be adopted.

The Beam mills who also operate shops for fabrication have reached an understanding concerning the minimum price of $13 per net ton for fabrication and an additional $12 per ton for erection.

From a number of quarters in the Steel and Machinery trades come reports of purchases of material for the Japanese Government. The details of these transactions are, however, closely guarded, as is only natural. The statement that a large quantity of Nickel Steel Plates and of Steel Rails has been taken for Japan cannot be officially verified.

Some round contracts for Structural Material are reported, conspicuous among them being one lot of 10,500 tons for the New York Edison company.

In Pig Iron Pipe makers East and West have taken some round blocks and there are some good inquiries in the market for Foundry Iron. In the East a fair tonnage of Basic Pig has been placed, some of it at a moderate concession.

Our Philadelphia correspondent discusses the question of costs as affected by railroad freights. In the Eastern Iron trade the necessity for a lowering of freights is keenly felt. They are to-day at the level to which they were pushed in the days of the boom.

A Comparison of Prices.

Advances Over the Previous Month in Heavy Type, Declines in Italics.

At date, one week, one month and one year previous.

	Sept.15, 1904.	Sept.8, 1904.	Aug.17, 1904.	Sept.16, 1903.
PIG IRON:				
Foundry Pig No. 2, Standard, Philadelphia	$14.25	$14.25	$14.25	$16.00
Foundry Pig No. 2, Southern, Cincinnati	12.00	12.00	12.00	14.75
Foundry Pig No. 2, Local, Chicago	....	13.50	13.25	16.00
Bessemer Pig, Pittsburgh	12.60	12.60	12.85	17.35
Gray Forge, Pittsburgh	11.75	11.75	12.00	15.50
Lake Superior Charcoal, Chicago	....	14.75	15.00	19.00
BILLETS, RAILS, &c.:				
Steel Billets, Pittsburgh	*20.00**	20.00	23.00	27.00
Steel Billets, Philadelphia	*22.50**	22.50	24.00	28.00
Steel Billets, Chicago	*20.00*	20.00	22.00	28.00
Wire Rods, Pittsburgh	*26.00*	26.00	28.00	34.50
Steel Rails, Heavy, Eastern Mill	28.00	28.00	28.00	28.00
OLD MATERIAL:				
O. Steel Rails, Chicago	....	10.50	10.50	14.50
O. Steel Rails, Philadelphia	....	....	11.75	16.00
O. Iron Rails, Chicago	....	16.00	15.50	18.00
O. Iron Rails, Philadelphia	**15.50**	15.50	14.00	19.00
O. Car Wheels, Chicago	....	11.00	11.50	21.00
O. Car Wheels, Philadelphia	11.50	12.00	11.50	18.00
Heavy Steel Scrap, Pittsburgh	....	11.50	11.50	16.50
Heavy Steel Scrap, Chicago	....	....	9.25	14.00
FINISHED IRON AND STEEL:				
Refined Iron Bars, Philadelphia	1.43½	1.48½	1.48½	1.60
Common Iron Bars, Chicago	...	1.35	1.35	1.55
Common Iron Bars, Pittsburgh	1.25	1.25	1.30	1.60
Steel Bars, Tidewater	*1.43½*	1.45	1.49½	1.73½
Steel Bars, Pittsburgh	*1.30*	1.30	1.35	1.60
Tank Plates, Tidewater	*1.53½*	1.53½	1.74½	1.78
Tank Plates, Pittsburgh	*1.40*	1.40	1.60	1.60
Beams, Tidewater	1.53½	1.53½	1.74½	1.73½
Beams, Pittsburgh	*1.40*	1.40	1.60	1.60
Angles, Tidewater	1.53½	1.53½	1.74½	1.73½
Angles, Pittsburgh	*1.40*	1.40	1.60	1.60
Skelp, Grooved Iron, Pittsburgh	*1.30*	1.30	1.32½	1.80
Skelp, Sheared Iron, Pittsburgh	1.35	1.35	1.32½	1.85
Sheets, No. 27, Pittsburgh	2.00	2.00	2.00	2.55
Barb Wire, f.o.b. Pittsburgh	2.05	2.05	2.05	2.60
Wire Nails, f.o.b. Pittsburgh	1.60	1.60	1.60	2.00
Cut Nails, f.o.b. Pittsburgh	1.60	1.60	1.65	2.15
METALS:				
Copper, New York	**12.62½**	12.62½	12.50	13.50
Spelter, St. Louis	**4.95**	4.92½	4.75	5.65
Lead, New York	**4.20**	4.20	4.10	4.40
Lead, St. Louis	**4.12½**	4.10	4.00	4.45
Tin New York	*26.42½*	27.50	26.75	27.40
Antimony, Hallett, New York	7.00	7.00	7.00	6.25
Nickel, New York	40.00	40.00	40.00	40.00
Tin Plate, Domestic, Bessemer, 100 pounds, New York	3.49	3.49	3.49	3.99

* Nominal.

Philadelphia.

FORREST BUILDING, September 13, 1904.

The reduction in prices of Finished Material, announced last week, had no perceptible influence as regards the demand. Consumers of Pig Iron and Scrap are working for lower prices to help them out, but it will be hard work to squeeze anything out of these articles, as sellers claim that they are already down to the irreducible minimum. Be that as it may, buyers are looking for some advantages in that direction, so that, as a matter of fact, the reductions made on the pooled specialties have merely resulted in claims for reductions at other points, without securing satisfaction to any of the interests concerned. It will take time to adjust matters, but it is the general impression that the reductions made last week are inopportune and not likely to have any influence in stimulating the demand. There is a slight increase in the demand for Iron and Steel, but this is due more to the season than to the fact that prices are lower. Ultimately lower prices will, of course, encourage business, and those who are contemplating operations that will require large tonnages of Iron and Steel will be more inclined to begin estimating, but $4 per ton difference in the cost of Iron and Steel will not be much of an inducement on a sky scraper, for instance, or on a large merchant vessel. If they are really going to be built the difference in price would not lose the order, while if they are only in embryo $4 per ton would not of itself have lost the order. There are other reductions that would be of vastly greater importance and vastly more helpful to the Steel trade. Railway freights are just the same as when Pig Iron was over $20 per ton, and when Coal and Coke were bringing twice and three times to-day's prices. It is said that at least one-third the cost of Pig Iron is made up of freights, but while everything else is

down, there is no reduction in freights. If reductions are going to be made as they have been, why should the railways be exempt from taking their share? If the same persistence was used in securing reductions in freights as in other directions, it would help the trade wonderfully, but the railways appear determined to concede nothing until they are forced into it. Everything else has taken its share of the changed conditions; why, then, should the railways be exempt, and if they are to be exempt, why should not labor have been exempt, and why should prices be reduced? If lower prices are essential to renewed activity in business, why should not all the interests contribute to the general average in the reductions?

Pig Iron.—The monthly report of furnace conditions published last week was a general surprise, indicating as it does unexpectedly favorable conditions. Coming at a time coincident with sharp reductions in Finished Material, the effect of the furnace report was considerably minimized, and even yet the trade hardly know what position to assume in regard to the matter. Ordinarily it would have been a strong bull card, and it may be yet, but in the meanwhile all thoughts of higher prices are dissipated. Consumers are sore in having to submit to lower prices for their products and are strenuous in the demand for some compensation in the way of lower prices for raw materials, but how it will come out remains to be seen. Producers of Pig Iron say that they are on rock bottom and can go no lower, and as a matter of fact are selling a good deal of Iron at last week's prices, but that is about the best they can do. Once in a while 1000-ton orders are taken at lower prices than have yet been quoted publicly, but they are exceptional cases and may remain such, although the next two or three weeks will be trying times. Less than $14.25 has been accepted for No. 2 X Foundry and $12.50 for Basic, but whether these prices will be generally met is open to question, although, as just stated, the next two or three weeks will develop whatever there may be in the situation, be it strength or weakness. Southern Iron is not much of a factor at the present time, but it may become one of considerable importance if the Alabama companies get to work again. It may be regarded as certain that if they come out winners in the strike with their miners they will not hold out for the $9.50 basis for their Iron; probably $9 will be their full figure. Southern No. 2 X has been bought within a few days past at less than $13.50, Philadelphia, for No. 2 X Foundry, and if the Alabama furnaces get to work it is doubtful if much business can be done in this vicinity at over $14 for any No. 2, except, perhaps, for one or two special brands, which would be an average of about 50c. less than to-day's prices. The situation is so complicated, however, that no confident predictions can be made at the present time, as a very slight turn for either better or worse could easily change the entire character of the market. Meanwhile for Philadelphia and nearby deliveries to-day's quotations are about as follows:

No. 1 X Foundry	$15.00 to $15.25
No. 2 X Foundry	14.25 to 14.50
No 2 Plain	13.50 to 13.75
Standard Gray Forge	13.00 to 13.25
Ordinary Gray Forge	12.50 to 12.75
Southern No. 2 X Forge, rail	13.75 to 14.00
Basic	12.75 to 13.00
Low Phosphorus	17.50 to 18.00
Malleable Iron	14.50 to 14.75

Steel.—Business is somewhat unsettled, owing to the uncertainty in regard to prices. Orders are being entered, however, subject to prices which may be arranged at the meeting of the Billet pool.

Plates.—Some new business has been placed, but the tonnage was not specially large and was mostly for delivery at Western points and in the Central West. Chicago and the Lake cities are taking considerable quantities, but there is not much demand in this territory, the question of price being no stimulant except where material would be taken about as readily at the old price as at the new, quotations for which are as follows:

	Carloads. Cents.	Part carloads. Cents.
Rectangular Plates, 24-inch and under	1.43½	1.47½
Tank Steel, ¼-inch and heavier	1.53½	1.57½
Tank Steel, 3-16-inch	1.63½	1.65
Tank Steel, Nos. 7 and 8, B. W. G.	1.68½	1.72½
Tank Steel, Nos. 9 and 10, B. W. G.	1.78½	1.82½
Flange or Boiler Steel	1.63½	1.67½
Commercial Fire Box Steel	1.73½	1.77½
Still Bottom Steel	1.83½	1.87½
Locomotive Fire Box Steel	2.03½	2.07½
Plates over 100 to 110 inches	.05 per lb.	extra
Plates over 110 to 115 inches	.10	"
Plates over 115 to 120 inches	.15	"
Plates over 120 to 125 inches	.25	"
Plates over 125 to 130 inches	.50	"
Plates over 130 inches	1.00	"
All sketches (excepting straight taper plates varying not more than 4 inches in width at ends, narrowest end being not less than 30 inches)	.10	"
Complete Circles	.20	"

Structural Material.—There is a fairly good demand for small and medium sized lots, but no large tonnages have been taken since the recent reduction in prices. There is more business in prospect, however, although the lateness of the season may cause a good deal of work to be postponed until spring. Prospects are more favorable, however, and with better conditions in labor the chances for permanent improvement are greatly strengthened. Prices are now on the following basis for Philadelphia and nearby points: Beams, Channels and Angles, 1.53½c. to 1.65c., according to specifications, and small Angles, 1.50c. to 1.55c.

Bars.—Business has been held in abeyance pending some decision in regard to prices on Steel Bars, which are expected to be arranged to-day or to-morrow. There is likely to be a better demand for both Iron and Steel Bars, but the reductions recently made in other products lead to the impression that Bars will have to take their turn with the rest. Be that as it may, buyers are holding off pending further developments, although for the time being quotations are 1.43½c. to 1.48½c. for either Iron or Steel Bars.

Sheets.—Business is well maintained and mills are running pretty full, although prices are irregular and unsatisfactory, but without quotable change.

Old Material.—Buyers are holding off for lower prices for all Scrap Material. Meanwhile business is in a waiting condition until one side or the other change their views. Bids and offers for deliveries in buyer's yards are about as follows:

No. 1 Steel Scrap	$11.50 to $12.00
Old Steel Axles	15.00 to 16.00
Old Iron Axles	18.00 to 18.50
Old Iron Rails	15.50 to 16.00
Old Car Wheels	11.50 to 12.50
Choice Scrap, R. R. No. 1 Wrought	14.25 to 14.50
Machinery Scrap	11.50 to 12.00
Low Phosphorus Scrap	16.00 to 16.50
Wrought Iron Pipe	11.00 to 11.50
No. 1 Forge Fire Scrap	10.00 to 10.50
No. 2 Forge Fire Scrap, Ordinary	8.00 to 8.50
Wrought Turnings	8.75 to 9.00
Wrought Turnings,, Choice Heavy	10.00 to 10.50
Cast Borings	6.75 to 7.00
Stove Plates	9.50 to 10.00

Cleveland.

CLEVELAND, OHIO, September 13, 1904.

Iron Ore.—There is some little talk of belated Ore buying, but this movement does not seem to have reached any large proportions as yet. The prices hold about as they have been, Bessemer old range being quoted, for base analysis, at $3.25, f.o.b. lake ports, and Bessemer Mesaba of the same grade at $3. The non-Bessemer old range has been quoted at $2.60 to $2.75, and non-Bessemer Mesaba at $2.40 to $2.50. The rates of carriage remain at 65c. from Duluth, 60c. from Marquette and 50c. from Escanaba.

Pig Iron.—The buyers of Foundry Iron have not been contracting very heavily here of late. They have shown something of a disposition to request shipments on such material as they have ordered. It seems that the melting of Iron in this territory shows a considerable increase. In many instances the buyers have been asking shipment ahead of the time when it is due. The prices show a tendency to remain about as they have been, at $12 for quick shipment and $12.25 for future delivery. There is hardly any more Iron for sale here at $11.75, in the Valleys. The Southern Foundry producers are selling some little material in this market, but they have not been getting an overabundance of orders. The quotation has continued at $9.50, Birmingham, to which is added a $3.85 freight rate to make up the Cleveland price. There is a slight improvement in the inquiries for Basic and Bessemer Iron, especially for the former.

Finished Iron and Steel.—There are varying reports as to the Steel trade. In some quarters there is a decided improvement, but in others a waiting tendency is still displayed. The market is divided between the opinions that the recent cut was final and that others are expected. In this territory the best situation has been in the Bar trade. Bar Steel has shown an improved demand here of late, and this has even been transferred to the Bar Iron trade as well. The buying has been good, orders coming in steadily. There has been some talk of an improved demand for Structural growing out of shipbuilding conditions. Three orders have been placed for Steel ships, and the information is that others are pending. The Plate situation is improved sentimentally, but not in any such shape that could be called tangible. In the Sheet trade there is a little better buying of all gauges. The market is broader than it has been. Prices have not been affected, except as the prices of Plates affected the price of ½ and 3-16 Plates, which have dropped $4 a ton in keeping with the decline in Standard Plates.

Old Material.—There has been a little better feeling in the market, especially in Heavy Steel and Cast Scrap. The buyers have been holding off. The strength is largely sentimental. Prices are revised and quoted as follows—all gross tons: Old Steel Rails, $12; Heavy Melting Steel, $12; Old Car Wheels, $12. All net tons: Cast Borings, $4; No. 1 Busheling, $10.50; No. 1 Railroad Wrought, $12 to $12.50; Wrought Turnings, $7; Iron Car Axles, $16 to $17; No. 1 Cast, $10.50 to $11; Stove Plate, $7 to $7.50.

Pittsburgh.

PARK BUILDING, September 14, 1904.—(*By Telegraph.*)

Pig Iron.—We note an active inquiry for both No. 2 Foundry and Forge Iron, and a good deal of tonnage is changing hands. The Westinghouse Electric & Mfg. Company is in the market for 8000 tons of No. 2 Foundry, 5000 tons for its Cleveland works and 3000 tons for the Allegheny works. This business is likely to be closed this week. We note sales of about 4000 tons of Northern Forge Iron on the basis of about $11.75, f.o.b. Pittsburgh. There is not much doing in Bessemer or Basic Iron, which is held at about $11.75, Valley furnace, for prompt shipment, and $11.90 to $12 for the balance of the year's delivery. Northern No. 2 Foundry Iron is held at about $11.65 to $11.75, Valley furnace, or $12.50 to $12.60, Pittsburgh. Some furnaces are holding their No. 2 Foundry at $12, furnace. We quote Northern Forge Iron at $11.75 to $11.85, Pittsburgh.

Billets.—No meeting of the Billet Association will be held this week, as some of the larger Steel manufacturers are in New York and for this reason a meeting in Pittsburgh this week could not be arranged. The general impression is that the price of Billets will be put at about $20 and Long Sheet Bars at about $22 at a meeting of the Billet Association which will be held in Pittsburgh on Tuesday or Wednesday of next week. In the meantime very little Steel is being sold, prices ranging from about $20 up to $23, the latter price for carload lots for prompt shipment.

Steel Bars.—A meeting of the Steel Bar makers will be held in Pittsburgh next week in connection with the Steel Billet meeting, at which it is probable the price of Steel Bars will be reduced $1 a ton, or to 1.30c., Pittsburgh.

(*By Mail.*)

While general conditions in the Iron trade are perhaps better than they were a week or two ago, yet at the same time it is a fact that tonnage is still disappointing, buyers showing a continued disposition to hold off as long as possible, and when orders are placed they are usually for actual needs. It is a little too early yet to accurately gauge the effect of the reduction in prices of Plates and Structural Steel, and tonnage in these products is very little, if any, larger than before the reduction was made. We are just between the spring and fall trades, and it is believed that in October, or not later than November, there will be a material increase in tonnage.

The Pig Iron situation is more encouraging than for some time, the report of J. G. Butler, chairman of the Bessemer Furnace Association, issued on September 7, showing a reduction in idle capacity on September 1 over August 1 of 13 per cent. The fact that stocks of Pig Iron in August decreased 60,000 tons is conclusive evidence that not only has consumption of Pig Iron caught up with production, but is exceeding it. The large increase in active capacity is due to the blowing in of a large number of blast furnaces by the United States Steel Corporation, this company having 56 stacks in blast on September 1 and only 22 out.

While there is not a great deal doing in Bessemer Iron, there is an active inquiry for Gray Forge and Foundry, and a good deal of tonnage is changing hands. Some of the Valley furnaces are holding No. 2 Foundry at $12 at furnace, for balance of the year delivery, but other sellers are entering business at $11.75, and in exceptional cases this has been shaded 10 to 15 cents a ton. The Westinghouse Electric & Mfg. Company is in the market for 8000 tons of Foundry Iron, 5000 tons for its Allegheny works and 3000 tons for its Cleveland works. This business is expected to be closed this week and will be a pretty thorough test of actual prices. Several leading Pittsburgh consumers of Forge Iron have placed good sized contracts recently, one Skelp plant buying about 3000 tons for September, October and November delivery on the basis of $11.75, Pittsburgh. Bessemer Iron is held at about $11.75 to $12 at furnace, or $12.60 to $12.85, Pittsburgh. Firm offers of $11.50, Valley, for Basic Iron have been turned down, the furnaces quoting $11.75 to $12, and refusing to go lower.

The Billet situation is as much in the dark as ever and as yet no official reduction has been made in prices of Billets or Bars, despite daily press reports to the contrary. Some differences exist among the Billet mills that will have to be adjusted before the mills can get together and make prices that will be observed. The situation now stands that a meeting of the Billet mills is to be held in Pittsburgh on Monday, September 19, when it is expected that the price of Bessemer and Open Hearth Billets, ordinary carbons, will be put at $20, Long Sheet and Tin Bars $22 and Cut Bars $22.50, f.o.b. Pittsburgh. It has been decided to make a larger differential between the price of Billets and Sheet and Tin Bars than heretofore.

The settlement of the wage scale dispute between the Republic Iron & Steel Company and the Amalgamated Association has resulted in starting up a good many idle mills of Republic that were shut down about a week ago. The Bessemer plant of Republic Iron & Steel Company at Youngstown, which was idle last week, started up again Monday morning, September 12. The Rod, Wire and Nail mills of the American Steel & Wire Company at South Sharon started up this week. The men accepted a slight reduction in wages, but were allowed extra help, which will increase the tonnage and make their wages almost what they were before the cut was made.

Ferromanganese.—The market continues very quiet and we quote foreign and domestic Ferro at $41 to $41.50, delivered, for large lots.

Muck Bar.—We do not hear of any sales and quote best grades of Muck Bar, made from all Pig Iron, at $23.50 to $24, delivered to mills in the Pittsburgh district.

Wire Rods.—The Rod market is quiet, consumers anticipating still lower prices and are holding off making purchases. The nominal price of Bessemer and Open Hearth Rods is about $27, Pittsburgh, but on a firm offer this would probably be shaded. As stated last week, if a reduction of $3 or $4 a ton is made in Billets a proportionate reduction in price of Rods would probably result.

Skelp.—In addition to heavy sales of Iron Skelp noted in our report last week, we are advised that inquiries for a considerable tonnage of Steel Skelp, on which mills are now figuring, are in the market and at least part of this business is expected to be closed this week. We quote Grooved Iron Skelp at 1.40c., Sheared Iron Skelp, ordinary width and gauges, at 1.45c., while for narrow sizes and light gauges Sheared Iron Skelp has sold as high as 1.55c. Grooved Steel Skelp is held at 1.30c. and Sheared at 1.35c. to 1.40c.; all these prices are f.o.b. cars, delivered to mills in the Pittsburgh district.

Steel Rails.—No large lots have been placed, only an occasional stray contract coming in and not involving heavy tonnage. It is claimed actual tonnage of Rails booked by the mills this year is about 1,550,000 tons, a little more than half of the tonnage placed last year. Not much additional business can be expected, as the season is very late. We quote at $28, at mill, for Standard Sections, the mills equalizing freights. Low prices continue to be made on Light Rails, which range from $18.50 to $23, depending on weight.

Structural Material.—The only large contract placed recently was one for about 800 tons by the Seamless Tube Company, which went to McClintic-Marshall Construction Company. Additional tonnage will come from this concern before long. The Duquesne Way tonnage is held up, and may not come out for several months. The Beam mills, belonging to the association, have reached an agreement to maintain about $13 for fabrication and about $12 for erection of Steel. For some months the Beam mills, while maintaining official prices on Steel, have been doing fabricating and erection at close to cost, and on some contracts at less than cost. This has worked a hardship to contracting concerns who have to buy Material from the mills, and made it practically impossible for them to compete. Under the agreement just made these concerns will be practically on the same basis, and all will have about an equal chance in competing for work coming up. We quote: Beams and Channels, up to 15-inch, 1.40c.; over 15-inch, 1.50c.; Angles, 3 x 2 up to 3 x 6, 1.40c.; Zees, 1.40c.; Tees, 1.40c.; Steel Bars, 1.35c., half extras, at mill; Universal and Sheared Plates, 1.40c.

Plates.—It is stated that the Japanese Government has placed contracts with the Carnegie Steel Company for upward of 20,000 tons of Nickel Steel Plates for use on Japese battle ships. This tonnage was secured by the United States Steel Exports Company, a subsidiary interest of the United States Steel Corporation. Quick delivery is to be made on these Plates and good prices were obtained. The general Plate trade continues quiet, the recent reduction in prices not having stimulated demand, nor was it expected that it would, as there is not the business being placed with the car shops, boat builders and other large users of Plates that would involve a heavy tonnage of Plates. When these branches of trade have shown improvement a natural increase in tonnage in Plates will follow. We quote: Tank Plate, ¼ inch thick, 6¼ to 24 inches wide, 1.30c., base; over 24 inches wide and up to 100 inches in width, 1.40c., base, at mill, Pittsburgh. Extras over the above prices are as follows:

	Per pound extra. Cents.
Gauges lighter than ¼-inch, to and including 3-16-inch Plates on thin edges	0.10
Gauges No. 7 and No. 8	.15
Gauge No 9	.25

Plates over 100 to 110 inches	.05
Plates over 110 to 115 inches	.10
Plates over 115 to 120 inches	.15
Plates over 120 to 125 inches	.25
Plates over 125 to 130 inches	.50
Plates over 130 inches	1.00
All sketches (excepting straight taper Plates, varying not more than 4 inches in width at ends, narrowest end being not less than 30 inches)	.10
Complete Circles	.20
Boiler and Flange Steel Plates	.10
Marine, "A. B. M. A." and ordinary Fire Box Steel Plates	.20
Still Bottom Steel	.30
Locomotive Fire Box Steel	.50

Shell grade of Steel is abandoned.

TERMS.—Net cash 30 days. For anticipated payments a maximum discount may be allowed at the rate of 6 per cent. per annum, and for a longer time than 30 days interest shall be charged at the same rate per annum. Invoices paid within ten days from date thereof, discount of ½ of 1 per cent. is allowable. Pacific Coast not included.

Sheets.—A fair amount of tonnage is being placed in Sheets, there being but very little shading on the price of 2.10c. on No. 28, which is being quoted by the leading mills. Consumers of Sheets, who are holding back placing orders in the belief that if a material reduction in the price of Sheet Bars is made a corresponding reduction in price of Sheets will take place, may find they are wrong, as the price of Sheet Bars is not likely to be reduced more than $1 a ton, if that. Sheets have been very low in price for a long time, and with Sheet Bars at, say, $22.50, the profit to the Sheet mills at present prices of Sheets is not very large. We quote No. 26 Black Sheets, box annealed, one pass through cold rolls, at 1.95c.; No. 27, 2c.; No. 28, 2.10c., in carloads and larger lots. Galvanized Sheets are sold at about 80 and 7½ per cent. off, but on very desirable specifications a few mills occasionally name 80 and 10 per cent. off in large lots. We quote Galvanized Sheets as follows: Nos. 22 and 24, 2.59c.; Nos. 25 and 26, 2.77c.; No. 27, 2.96c., and No. 28, 3.14c. Jobbers charge the usual advance over these prices on small lots from store.

Iron and Steel Bars.—As yet no action has been taken in the matter of reducing prices on Steel Bars, and it is not improbable the price will not be changed, as anticipated. The Republic Iron & Steel Company has come to a settlement with the Amalgamated Association, and some of its idle Bar mills, including the Brown-Bonnell and Valley Works at Youngstown, have started up. The concessions secured by the Republic in the puddling and finishing scales will also be allowed to the other Bar Iron mills that sign the scale. We quote Bessemer and Open Hearth Steel Bars at 1.35c. in carloads, with the usual differentials for small lots. We quote Refined Iron Bars at 1.25c., f.o.b. Pittsburgh.

Spikes.—Demand for Spikes continues light, and some very low prices are being made in Chicago and in the East. Pittsburgh mills are not heeding these prices, but continue to quote Railroad Spikes at $1.55 in carloads and $1.60 in less than carloads, f.o.b. Pittsburgh.

Hoops and Bands.—A fair amount of tonnage is being placed in both Hoops and Bands, but the mills are running mostly on contracts. It is said that agreed prices are being well maintained. We quote Steel Hoops at 1.55c. and Steel Bands at 1.35c., extras as per Steel card.

Merchant Pipe.—Considering the season of the year, the amount of tonnage being placed in Merchant Pipe is fairly satisfactory to the mills. However, it is not large enough to give all the mills full work, and occasionally official discounts, as issued recently by the leading interest, are slightly shaded by some of the outside mills. The Union Oil Company of California is inquiring for 35 miles of 6-inch Line Pipe and the mills are figuring on this business. Consumers' discounts in carloads are as follows:

Merchant Pipe.

	Steel.		Iron.	
	Black.	Galv.	Black.	Galv.
	Per cent.	Per cent.	Per cent.	Per cent.
⅛ and ¼ inch	71	55	69	53
⅜ and ½ inch	75	63	73	61
¾ to 6 inches	79	69	77½	67½
7 to 12 inches	74	59	72½	57
Extra strong, plain ends, ⅛ to ⅜ inch	64	52	62	50
½ to 4 inches	71	59	69	57
4½ to 8 inches	67	55	65	53
Double extra strong, plain ends, ⅛ to 8 inches	60	49	58	47

Boiler Tubes.—Tonnage in Boiler Tubes is quiet and there is more or less unevenness in official prices. Discounts to consumers in less than carloads are as follows:

Boiler Tubes.

	Steel.	Iron.
1 to 1½ inches	48	43
1¾ to 2¼ inches	60	43
2½ inches	62	48
2¾ to 5 inches	68	55
6 to 13 inches	60	43

In carload lots discounts are two points lower than the above.

Merchant Steel.—There is very little new buying, consumers holding off in the belief that if a reduction in prices of Steel Bars is made that nearly all kinds of Merchant Steel will also be reduced. On several large contracts placed by implement makers recently the mills guaranteed prices against decline. We quote: Plow Slabs, ¾-inch and heavier, 1.60c.; Tire Steel, 1.55c. to 1.60c.; Sleigh Shoe, flat, 1.40c. to 1.45c.; Cutter Shoes, 2.05c. to 2.10c.; Plow Steel, 6 inches and under, 1.35c.; Toe Calk Steel, 1.85c. to 1.90c.; Crucible Tool Steel, 6c. to 8c. for ordinary grades and 12c. and upward for special grades. Shafting is 52 per cent. off in carloads and 47 per cent. in less than carloads, delivered. On any attractive tonnage it is very probable that most mills would materially shade the above prices.

Spelter.—The Spelter market has quieted down materially after the recent flurry, but prices are very firm. We note sales of about 1200 tons of Spelter in this market the past week, one leading consumer having bought very heavily. We quote Prime Grades of Western Spelter at 5.07½c., Pittsburgh, equal to 4.94c., St. Louis.

Tin Plate.—New business in Tin Plate is quiet, and it is said the official price of the leading interest is being slightly shaded by some of the independent mills. We quote 100-lb. Cokes at $3.25, net, f.o.b. Pittsburgh district; terms, 30 days, or 2 per cent. off for cash in 10 days.

Coke.—There is a material improvement in demand of Furnace Coke, largely due to the starting up of a number of blast furnaces by the United States Steel Corporation, the Coke for which is furnished by the Frick Coke Company. In the past two weeks the Frick Company has started up nearly 3000 ovens, and outside Coke interests have started up more than 1000 ovens. Strictly Connellsville Furnace Coke is held at $1.45 to $1.50, and strictly Connellsville 72-hour Foundry Coke is held at $1.85 a ton, with some concerns quoting as high as $2 a ton. Out of a total of 29,340 ovens in the Upper and Lower Connellsville region, 21,203 were active last week and 8137 idle. The estimated output of the two regions for last week was over 250,000 tons, the Upper Connellsville region showing an increase in output over the previous week of 28,000 tons, and the Lower Connellsville region of 4000 tons. Main Line Furnace Coke is quoted from $1.30 to $1.40 a ton, and Foundry from $1.60 to $1.75 a ton.

Iron and Steel Scrap.—The Scrap market is quiet in demand, but prices are fairly firm. Heavy Melting Stock is held at $12 to $12.50 by dealers, while consumers are offering about $11.50 a ton for it. No. 1 Wrought Scrap is about $10.50 in net tons.

Eliot A. Kebler, Farmers' Bank Building, Pittsburgh, for the past eight years resident agent of Mathew Addy & Co., Cincinnati, dealers in Pig Iron, Steel and Coke, and covering Western Pennsylvania only, has been made manager of the Pittsburgh branch of that concern, and in the future will cover Western Pennsylvania, Eastern Ohio, including Cleveland and the Wheeling district.

Cincinnati.

FIFTH AND MAIN STS., September 14, 1904.—(*By Telegraph.*)

Pig Iron.—The past week has been an uneventful one and is practically a repetition of several that have preceded it. There is possibly a shade more inquiry in sight than during the week before, but outside of a general trade there is nothing of importance in view. Southern Iron is still holding firm, with but few sales in this territory, where same is needed for mixing purposes. There is no doubt that plenty of Southern Iron can be purchased on a $9.25 basis, yet there are several furnaces still holding out for $9.50. Northern Iron is quoted, with but one or two exceptions, as selling for $12, although it may be stated that several furnaces are still willing to contract at $11.50. Stocks are expected to show a further decrease this month, notwithstanding the fact that the production shows an increase. The leading Pipe interests in this vicinity are buying considerable tonnage, in such manner as best suits their needs. In fact, they represent the busy element in the matter of consumption, especially since the foundries have ceased to melt as a result of the strike. The furnaces, as a rule, refuse to make any contracts extending into next year and as a result consumers are only looking after early requirements. About the only inquiry of any size is one calling for 5000 tons of Northern and Southern for Pittsburgh and Cleveland delivery. The new furnace at Battelle, we understand, made its first cast yesterday. The capacity of this concern when in full operation will be about 250 tons per day. Freight rates from Hanging Rock district to Cincinnati, $1.15, and from Birmingham, $2.75. We quote, f.o.b. Cincinnati, as follows:

Southern Coke, No. 1	$12.50 to $12.75
Southern Coke, No. 2	12.00 to 12.25
Southern Coke, No. 3	11.50 to 11.75
Southern Coke, No. 4	11.25 to 11.50
Southern Coke, No. 1 Soft	12.50 to 12.75
Southern Coke, No. 2 Soft	12.00 to 12.25
Southern Coke, Gray Forge	11.00 to 11.25
Southern Coke, Mottled	10.75 to 11.00
Ohio Silvery, No. 1	15.65 to 16.15

Lake Superior Coke, No. 1..... 13.15 to 13.65
Lake Superior Coke, No. 2..... 12.65 to 13.15
Lake Superior Coke, No. 3..... 12.15 to 12.65

Car Wheel and Malleable Irons.

Standard Southern Car Wheel.....$16.25 to $16.75
Lake Superior Car Wheel and Malleable 15.80 to 16.30

Coke.—Coke is in good demand and quite a considerable tonnage has been placed during the past week. Contracts involving several hundred cars have been made, but, generally speaking, all was for early delivery. Operators seem averse to anticipating next year's demands and are confining their operations wholly to the remainder of the year. It is reported that the demand for Virginia stocks from the strike district of the South shows somewhat of a decrease, whether owing to the fact that the South is producing more than formerly or some other reason we cannot say. Prices are firm, the best grades of Connellsville Foundry selling anywhere from $1.85 to $2.10, f.o.b. ovens.

Plates and Bars.—Trade is quiet and demand light. The prices made by the Beam Association at its meeting last week show a drop in the schedule. We quote, f.o.b. Cincinnati, as follows: Iron Bars in carload lots, 1.40c., with half extras; the same in smaller lots, 1.70c., with full extras; Steel Bars in carload lots, 1.48c., with half extras; the same in smaller lots, 1.80c., with full extras; Base Angles, 1.53c. in carload lots; Beams and Channels in carload lots, 1.53c.; Plates, ¼-inch and heavier, 1.43c. in carload lots; in smaller lots, 1.80c.; Sheets, 16 gauge, in carload lots, 2.05c.; in smaller lots, 2.60c.; 14 gauge, in carload lots, 1.95c.; in smaller lots, 2.50c.; Steel Tire, ¾ x 3-16 and heavier, 1.68c. in carload lots.

Old Material.—We are pleased to be able to note a very perceptible change for the better for this class of material. Several very healthy transactions have taken place during the week and dealers are encouraged. We quote dealers' prices, f.o.b. Cincinnati, as follows: No. 1 Railroad Wrought Scrap, $10.50 to $11.50 per net ton; No. 1 Cast Scrap, $10 to $10.50 per net ton; Iron Rails, $14 to $14.50 per gross ton; Steel Rails, rolling lengths, $10 to $11 per gross ton; Relaying Rails, $19 to $20 per gross ton; Iron Axles, $14 to $15 per net ton; Car Wheels, $10 to $10.50 per gross ton; Heavy Melting Scrap, $9.50 to $10.50 per gross ton; Low Phosphorus Scrap, $11.50 to $12 per gross ton.

The New York Machinery Market.

NEW YORK, September 14, 1904.

Conditions show decided improvement. Both orders and inquiries are coming in in better volume, and the market has gained real snap and vim. Machinery merchants point to the fact that their factories advise them that they are continually adding to their force of workmen, being compelled to do so by the increased number of orders. The fact that manufacturers are enjoying better business is borne out by the reports of the numerous employment bureaus located in the large machinery centers. These reports indicate a much more active demand for men and a corresponding decline in the number of applications for positions. These conditions, coupled with the bright prospects promised by the many large inquiries still open, seem to justify the improved tone of the market. Several new projects of considerable magnitude have come to the front during the week, and the important matters which have been claiming the attention of the trade of late have shown gratifying progress.

The largest contract placed during this week was awarded to the Ingersoll-Sergeant Drill Company by S. Pearson & Son, Incorporated, of Long Island City, who are building the Pennsylvania Railroad tunnels under the East River and Long Island City. The contract calls for two compressed air power plants to be furnished complete ready for operation. It is the largest order of its kind ever placed. The combined capacity of the plants will be 50,000 cubic feet of low pressure air per minute and 12,000 cubic feet of high pressure air per minute. One of the plants will be located on each side of the East River. The contract calls for the following apparatus, which will be built by the Ingersoll-Sergeant Company:

Eight 16 and 34 inch and 26½ x 42 inch Semi-Tangye frame Corliss air compressors; two 16 and 34 inch and 22¼ and 15½ x 42 inch Semi-Tangye frame Corliss air compressors; two 16 and 34 inch and 15½ x 42 inch Semi-Tangye frame Corliss air compressors; ten 57-inch iron body vertical aftercoolers; ten 54 inch by 12 feet vertical air receivers; two 60 inch by 14 feet vertical air receivers. The auxiliary equipment for these plants will consist of the following: Ten 500 horse-power Stirling boilers, two complete gravity oiling systems; ten feed water controllers; four forced draft fans and engines; six 12 and 7 x 12 inch duplex feed pumps; two 3000 horse-power open feed water heaters; six surface condensers; six air and circulating pumps for condensers; two hot well pumps; six 3000-gallon centrifugal circulating pumps with engines; six oil separators for separating oil from exhaust steam; two air intake conduits and stacks; all steam piping and covering; exhaust piping and covering; steam separators; boiler feed piping; circulating water piping; guard rails, and drip system piping.

These plants will be erected by the Ingersoll-Sergeant Drill Company, under the personal supervision of J. H. Jowett, sales manager of the company.

It will be remembered that the Ingersoll-Sergeant Company recently received an order from the O'Rourke Engineering Construction Company for the compressed air plants to be used in building the Pennsylvania tunnel under the Hudson River.

Further contracts in connection with the Pennsylvania Railroad tunnel work have just been awarded by the O'Rourke Engineering Construction Company, which is building the Hudson River section. One of the orders was given to the Blakesley Foundry & Forging Company of Cleveland, Ohio, and calls for some 2500 tons of bolts.

The contract for all the hydraulic appliances in connection with the shield driving was awarded to the Watson-Stillman Company of New York. This contract includes four 23½-foot iron shields, for which will be required 96 hydraulic jacks and cylinders, each shield to be equipped with 24 jacks and cylinders, the jacks for driving it, and the cylinders for operating the doors. A large quantity of valves and other appurtenances will also be used. The iron structural work of the four shields will be done by the Riter-Conley Mfg. Company, Pittsburgh. An order for two sets of condensers and several auxiliary pumps was awarded to the Henry R. Worthington branch of the International Steam Pump Company.

In another column details concerning the purchase of machinery and appurtenances by the Panama Canal Commission are given, which will prove of interest to the machinery trade. Several members of the Commission, who have just concluded a tour of inspection over the route, returned to New York this morning on the steamship "Finance." They left immediately for Washington, where the Commission has established headquarters in charge of D. I. Murphy, secretary. Commissioner E. F. Wallace, chief engineer, was not among the party which arrived here this morning. He is still on the isthmus getting matters in shape for an active resumption of the work, and it is not generally known when he intends to return.

Concerning the large contemplated purchases of machine tools by the Eastern railroads little can be said this week. Small orders have been placed by the Erie, Philadelphia & Reading and Pennsylvania. In certain quarters of the trade this is taken as an indication that these roads do not intend placing blanket contracts covering their entire requirements, but intend buying the tools in small lots from time to time. Nothing has developed in connection with the pending Lehigh Valley list. Some purchases have been made by the Japanese Government, but the great bulk of the orders still remains unplaced.

Things have finally taken more definite shape in connection with the proposed new power station to be built by the New York Edison interests. Nothing of an official nature can be learned, however, as General Manager Murray stated to a representative of *The Iron Age* yesterday that he would prefer to await the sanction of the directors of the company before confirming the information which we have gathered in the trade. We are advised on good authority that the project is of greatest importance, and that it has been decided to proceed with the work at once. The new station is to be located on First avenue between Thirty-ninth and Fortieth streets. The building will be about 200 x 450 feet, five stories high, and will cost between $4,000,000 and $5,000,000. As we have previously noted, it will be equipped to produce about 112,000 horse-power. This equipment will consist of 14 5500-kw. alternating current 40-cycle generators, running at 6600 volts, each to be direct connected to a steam turbine of about 8000 horse-power capacity. There will be 72 horizontal water tube boilers of a nominal capacity of 650 horse-power each, and guaranteed to stand a 50 per cent. overload; 15 boiler feed pumps; 14 surface condensers, and a 5000-kw. direct current exciter. The plant is to have four large brick stacks, and will be equipped with two 50-ton electric traveling cranes. Of course, a large amount of coal and ashes handling machinery will be installed, as well as many other appurtenances. As we noted at the time, the contract for the boilers was awarded to the Babcock & Wilcox Company several months ago. As to the purchase of the turbo generators, it is rumored in the street that five of the sets have already been purchased from the Allis-Chalmers interests. It will be recalled that early this summer we noted the report that the New York Edison Brooklyn Rapid Transit interests had placed an order for six Allis sets of about 5500 kw. each. Interested parties now state that only one of these sets is to be placed in the Kent avenue station of the Brooklyn Rapid Transit Company, and the remaining five sets will be consigned to the new station of the New York Edison Company. There is also an unverified report to the effect that Allis condensers were also purchased to operate in connection with these six sets. Orders for the balance of the equipment, we are informed, will

be placed about December 1 of this year, or during the early portion of next year. Work on the building will be started immediately, however, as the contract for the foundations was awarded to Isaac A. Hopper & Sons, Incorporated, of 1170 Broadway, New York, last Friday. This contract amounted to about $200,000. The contract for the structural steel has also been placed.

To add to the interest displayed in the electrification matters of the New York Central & Hudson River Railroad and the New York, New Haven & Hartford Railroad comes the announcement that the former company intends equipping two tracks of its system between Syracuse and Utica electrically. This work will involve the further erection of great power stations in New York State.

In our issue of September 1 we noted the fact that steps were being taken to organize a Canadian company for the building of pressed steel cars which would be closely allied to the Pressed Steel Car Company of New York. While details of organization have not been fully perfected, we are officially advised that the success of the project is assured and that the new company will erect an immense steel car building plant at Montreal. The works will have a capacity of from 20 to 25 cars a day and will cost considerably over $500,000. Both freight and passenger cars will be produced. That work will be started on the plant at the earliest moment possible, and that it will be hurried to completion is evidenced by the fact that it is intended to have the works in operation before the close of next spring. While the consummation of this project will necessarily require the purchase of large quantities of machinery and equipment in this country, it is but plausible to suppose that a good portion will be secured in Canada, as we understand that Canadian capital will be largely interested in the new company.

In the annual report of the American Locomotive Company, which we print in another column, reference is made to the Atlantic Equipment Company as a subsidiary interest. This company is now building steam shovels and similar apparatus at the Richmond and Montreal shops of the American Locomotive Company.

Owing to increased demands on the work turned out at Stratford, Ont., the Grand Trunk Railway system have found it necessary to increase the present plant considerably at that point. The erecting shop now in use is to be extended into the present boiler shop, a distance of 179 feet, giving an additional 12 pits for engine repairs. The pits are to be of 22 feet centers, and built of concrete. An additional hoist and transfer table will also be used in connection with this extension. A new boiler shop is to be erected, the dimensions of which are 169 feet long by 120 feet wide, and will be equipped with two electric traveling cranes, one of 30 tons and one of 10 tons capacity. The building is to have concrete foundations, and the upper part of the structure will be built of cement, and composed entirely of cement and structural steel, with the exception of the window frames and sashes. The motive power for operating the machinery will be electricity. A new tender shop is also to be built, 326 feet long and 102 feet wide, of the same style of construction as the boiler shop. A new brass foundry, 41 x 70 feet, will be added to the plant, and an addition of 50 feet is to be put on the east end of the present blacksmith shop. The old tender shop is to be extended on the east end 70 feet, and is to be used for light repairs to locomotives, repairs to steam shovels and other similar work, and the west end will be extended 60 feet, and used as a wheel shop; the present brass foundry to be converted in additional machine shop space. The new buildings to be erected, and the additions made to the old ones, give a total of 74,654 square feet of additional floor space, and a large amount of new and up to date machinery is to be installed in the different shops for the purpose of economically repairing with dispatch the heavy power used on the Middle Division.

A report emanating from the Middle West caused quite a stir in the trade because it stated that the Niles Tool Works plant of the Niles-Bement-Pond Company was to be moved from Hamilton to Dayton, Ohio. The facts of the case are that it was found necessary to enlarge both the foundry and machine shop of the Hamilton plant, and, in order to so it would be necessary to have a street closed. This was refused by the authorities, and the company began looking about for a new location. There is every likelihood now that the authorities at Hamilton will reconsider their action and close the desired thoroughfare. The extensions contemplated are of a very substantial size, but the work will proceed gradually.

Two circulars have just been issued to the machinery trade of this country which are of considerable interest in view of the prominence of the interests involved. One of them, issued from Cologne under date of September 1, is as follows:

"On January 1, 1902, an agreement was made between Mr. Schuchardt and Mr. Schütte, according to which the European territory has since been divided between them and worked as follows: Eastern and Northern Europe is canvassed exclusively by and for account of Mr. Schuchardt. Western and Southern Europe is exclusively canvassed by and for account of Mr. Schütte. The New York office, 122 Liberty street, has hitherto been continued for joint account. It has now been found, however, to mutual advantage for both of us to have offices of our own, and for this reason we have decided to open for Cologne and its branches at Brussels, Liège, Paris, Milan and Bilbao, a new office under the firm of Alfred H. Schütte, 26 Cortlandt street, New York. This office will be under the management of T. H. Marburg, who has been connected with our New York office for over five years and who has been the New York representative of all the ten houses for the last five months. The office will represent the interests of Schuchardt & Schütte, Cologne, Brussels, Liège, Paris, Milan, Bilbao. With the exception of this change of address at New York, which concerns the above mentioned six houses, our business will be conducted entirely in the same way as heretofore, and we trust that the most pleasant relations, which have existed between ourselves and a great many American houses of prominence for so many years, will continue to our mutual benefit, and we on our part will make every possible effort to strengthen and develop the same. Faithfully yours, Schuchardt & Schütte."

The second one is dated Berlin, September 1, 1904, and reads:

"In accordance with the inclosed circular letter from Cologne, we beg to state that our New York house, under the old firm of Schuchardt & Schütte, 122 Liberty street, New York, and under the management of Ernst Müller, will in future represent the interests of our houses at Berlin, Vienna, Stockholm and St. Petersburg, exclusively. Please act accordingly in regard to all communications and shipments. Yours very truly, Schuchardt & Schütte."

It will be seen that Continental Europe has been divided in two by the concern which has done so much for the introduction of American machine tools in Europe. While the original name of the house is continued by both of the former partners in Europe, in order to keep matters straight on this side a division is made. So far as European consumers are concerned everything continues, ostensibly, as heretofore. Producers on this side must, however, deal in the future with two separate concerns in respect to Continental Europe. Both Mr. Marburg and Mr. Müller advise us that they are desirous of obtaining the latest catalogues and price-lists of builders of American machinery and appliances who wish to extend their European business.

The Bureau of Supplies and Accounts, Navy Department, Washington, will receive bids until Sepember 27 for a quantity of supplies for the League Island and Washington navy yards and the Naval Academy, Annapolis, including a quantiy of electric motors, buoyer hammers, Little Giant drills, boiler pumps, slotting machine, boring machine, &c.

The Bureau of Supplies and Accounts, Navy Department, Washington, will receive bids until October 11 for a quantity of machine tools for the Portsmouth, Boston, Narraganset Bay, League Island, Annapolis and Norfolk navy yards, including shifting locomotive, drills, lathes, grinders, pulleys, molding machine, cutting machine, jointing machines, planers, borer, blower, boring mills, drill press, crank shaper, dovetailing machine, band scroll, pumping outfit, revolving crane, cable cars, saw bench and motor drive.

On September 15 the offices of the Sweet's Steel Company will be removed from Syracuse, N. Y., to Williamsport, Pa., where the company has just completed extensive new works.

The George A. Hogg Iron & Steel Company of Pittsburgh, manufacturer of engines and rolling mill machinery, reports quite an improvement in business lately. Among the orders recently received is one for a complete 18-inch mill for rerolling old rails for the Union Rail Company of Huntington, W. Va.; a 20-inch muck mill for the Wilkes Rolling Mill Company of Sharon, Pa.; a 12-inch guide mill for the Iron Company of America, Roanoke, Va.; two large roll lathes for John A. Roebling's Sons' Company, Trenton, N. J.; part of a 9-inch mill for Westerman & Co., Lockport, N. Y.; 15 or 20 rock crushers for the Abbe Engineering Company of New York City, as well as a number of smaller jobs.

Leslie S. Robertson, secretary of the Engineering Standards Committee, appointed by a number of leading English technical societies, is in the country to study the progress made in this country in the adoption of standardization.

J. W. Rathbone, formerly of the Penn Steel Casting Company, has been appointed supenintendent of the Birmingham Steel & Iron Company, manufacturer of steel castings, of Birmingham, Ala.

The Cincinnati Molders.

CINCINNATI, OHIO, September 13, 1904.—The condition of the strike of the molders is practically unchanged. The foundrymen claim that if the strike was bound to occur, it could not have come at a more opportune time for them than at the present. They say that the general condition of their business is such that they can close up shop for a month and suffer no particular loss. A representative of the National Founders' Association is on the ground and ways and means are being devised to carry on the business of the several foundries interested and at the same time defeat the plans of the strikers. To this end they have held several conferences, and as an outcome of one of these the following resolutions were unanimously adopted:

"We, the undersigned, hereby agree to and with each other that the wages of molders in each and all of our foundries for a period of one year from this date shall be as follows:

"Bench molders, $2.80 per day, and floor molders, $3 per day, ten hours to constitute a day's work.

"It is further agreed by all of the undersigned that no individual agreement shall be made by either or any of the signers hereto with the Iron Molders' Union without having first obtained the written consent of two-thirds of the signers hereof, and the consent of the commissioner of the National Founders' Association, in writing."

It is understood that the employers' association is in a position to furnish men—and as many of them as are needed. In addition to this the National Founders expect to open a temporary office, where they can be in touch with things and be in a position to direct the movements of the foundrymen. There is to be another meeting held this evening, when a definite plan of action will be mapped out.

National Metal Trades Association Notes.

The Executive Committee of the Cincinnati Metal Trades Association are arranging quite an elaborate programme for their next quarterly dinner, which will take place on October 6.

The association's certificate of recommendation has met with favor from the Executive Committee of the Chicago Brass Manufacturers' Association and they have decided to adopt it for the benefit of the faithful and efficient employees of their members.

The commissioner is offering the secretaries of the several local metal trades associations co-operating with the national space in the monthly publication, wherein they can set forth a summary of the different reports which they issue to their members.

The Executive Committee of the New York Metal Trades Association have held two conferences with a committee representing the Defenders' Union and Helpers' Union in regard to the renewal of old contracts, but have come to no definite settlement as yet.

There will be a meeting of the Twelfth District Committee, which embraces the city of Chicago, the latter part of this week.

Judging from the number of requisitions for operatives being received it would appear that there is a very decided revival in business.

The Technology Club of Syracuse, which was organized at Syracuse, N. Y., January 6, 1904, with a charter membership of 129, has headquarters at 707 Dillaye Building, in that city, where rooms have been suitably furnished for a library and social purposes. The object of the organization is the promotion of professional and social intercourse among its members. These include engineers, architects, analytical chemists, metallurgists and geologists. The meetings are held monthly, except during the months of June, July, August and September. The annual election of officers will take place at the October meeting. The following officers were elected at the organization meeting: Prof. John E. Sweet, president; Dean William Kent, first vice-president; Henry C. Allen, second vice-president; Edward N. Trump, John H. Barr, Edmund L. French and James E. Randall, directors; Alexander T. Brown, treasurer, and A. Frederic Witmer, secretary. On June 4 last the club took a trip over the Auburn & Syracuse Electric Railway to Auburn, N. Y., where several large manufacturing plants and the power house of the above mentioned railway were visited. These visits to manufacturing plants are to be made one of the special features of entertainment and instruction.

August Fluctuations in Iron Stocks.

The following table shows the fluctuation in quotations of the stocks of iron and steel companies in the month of August, with the dates on which the highest and lowest prices on each stock were realized:

		Lowest.	Date. Aug.	Highest.	Date. Aug.
.....	Allis-Chalmers, com....	10½	22	11½	10
.....	Allis-Chalmers, pref....	47	14	50	26
$41,233,300	Amer. Can, com.....	4½	2	4¾	29
41,233,300	Amer. Can, pref.....	40	1	47	31
29,000,000	Am. Car & F'ndry, com.	18¼	11	19¼	18
29,000,000	Am. Car & F'ndry, pref.	78	27	80	26
24,100,000	Am. Locomotive, com...	20	31	22⅝	14
25,000,000	Am. Locomotive, pref..	87½	5	90½	29
.....	Am. Steel F'ndries, com.	5⅞	9	6	18
45,000,000	Cambria Steel.....	19½	31	20	18
17,000,000	Colorado Fuel & Iron...	34¾	6	37⅞	26
25,000,000	Crucible Steel, com.....	5¼	31	5⅝	9
25,000,000	Crucible Steel, pref....	35⅝	11	38½	5
.....	Dominion Iron & Steel..	8½	19	12	23
12,500,000	Pressed Steel, com.....	32	9	34	4
12,500,000	Pressed Steel, pref.....	75	13	78	23
10,000,000	Railway Spring, com...	19	19	20	14
10,000,000	Railway Spring, pref...	75	1	80	29
27,191,000	Rep. Iron & Steel, com.	7⅛	19	7⅝	29
20,306,900	Rep. Iron & Steel, pref.	41½	22	45	3
7,500,000	Sloss-Shef. S. & I., com.	37	25	38½	2
6,700,000	Sloss-Shef. S. & I., pref.	86	29	88	13
20,000,000	Tennessee Coal & Iron..	42⅞	11	46¼	2
12,106,000	U. S. C. Pipe, com.....	8⅛	18	9⅝	30
12,106,000	U. S. C. Pipe, pref.....	51½	9	54¼	30
510,361,300	U. S. Steel Co., com....	11½	12	12⅞	31
508,511,200	U. S. Steel Co., pref....	57¾	9	61⅞	31
.....	U. S. Steel Co., new 5's.	77⅞	22	80	31

The Peoria Steel & Tool Company.—Parr & Hulsebus, Peoria, Ill., architects for the new plant of the Peoria Steel & Tool Company, in speaking of the equipment for the plant, say that, while not yet definitely settled, it will probably be as follows: The steel department will start with one 24-pot crucible furnace, four steam hammers varying in size from 500 to 1000 pounds and their furnaces, one set of three-high rolls with its two furnaces and a medium sized shear, and a small machine shop for keeping in repair these machines. This department will be housed in two main buildings, each 60 x 105 feet; a crucible room, 30 x 60 feet, and a warehouse, 31 x 60 feet. The tool department will consist of a foundry, 60 x 60 feet, with a 10-ton cupola; a core oven and tumbler room, 21 x 44 feet; a pattern shop, 32 x 60 feet and two stories high, and a fully equipped machine shop, 60 x 120 feet in size. The power will be supplied from a power house about 40 x 60 feet in size, containing 250 horse-power water tube boilers and a steam turbine and electric generator of about 260 horse-power capacity. All machines will have electric motors except the rolls and the steam hammers. An office building, about 40 x 60 feet and two stories high, will be built as soon as the shops are in running order. The buildings will all be of brick with steel trusses and corrugated iron roofs. The machine shop and pattern room will have 2-inch wooden floors, the rolling mill will have a floor of cast iron plates, and the hammer room will have cement floor. The work of excavating and putting in the concrete foundations has already commenced, and the contract for the superstructures will be let in a few days.

Dr. Elmer E. Brown of E. E. Brown & Co., iron founders, Philadelphia, returned on the "Westernland," on the 5th inst., from an extended trip abroad.

E. F. Du Brul, former commissioner of the National Metal Trades Association, has nearly completed his arrangements to enter the field of cement manufacture.

Metal Market.

NEW YORK, September 14, 1904.

Pig Tin.—The market has been very irregular, with business running very light. Deliveries were also light. The net result of the week's fluctuations in prices has been a very marked decline in prices here, while in London quotations are a shade higher than they were last week. The market closed easier to-day, spot September and Ocober deliveries being quoted 26.42½c. to 26.62½c. Closing cables in London named £126 2s. 6d. for spot, and £126 15s. for futures. The arrivals thus far this month amount to 1190 tons, and the quantity afloat is figured at 1545 tons.

Copper.—The situation remains unchanged. Little interest has been shown in the article and prices are without change from last week. Prices are quoted as follows: Lake, 12.62½c. to 12.75c.; Electrolytic, 12.50c. to 12.75c., and Casting, 12.37½c. to 12.50c. The London market is practically unchanged from last week, quoting to-day at the close as follows: Spot, £57 5s.; futures, £57 7s. 6d, and Best Selected, £61. The exports thus far this month have aggregated 5841 tons. This shows a considerable falling off, as was predicted last week. Members of the trade now state that they do not expect to see the exports for this month amount to more than 17,000 tons.

Pig Lead.—The market is quiet and unchanged. The recent advance in price made by the American Smelting & Refining Company has apparently had no effect upon the disposition of purchasers. Prices are unchanged, the American Smelting & Refining Company quoting on a basis of 4.20c. for "shipment" Desilverized in 50-ton lots. Strictly spot Lead in small quantities is quoted here 4.20c. to 4.30c., while St. Louis telegraphs 4.10c. to 4.15c. The London market has advanced a shade, to £11 16s. 3d.

Spelter.—The market is firm and higher, although quiet so far as demand is concerned. Spot is now quoted 5.10c. to 5.20c., while the St. Louis price is 4.95c. London shows a decline, naming £22 10s.

Antimony.—Demand is light and the market is easier. Cookson's and Hallett's are quoted at 7c. and other grades at 6c.

Nickel.—The usual amount of business is passing and prices are steady, large lots being quoted at 40c. to 45c. and smalier quantities at 50c. to 60c.

Quicksilver.—The market is very quiet and weak. Flasks of 76½ lbs. were quoted to-day at $42, with the prospects of lower prices at any time. London is unchanged at £7 15s.

Tin Plate.—Nothing new has developed in the situation as regards Tin Plate. The market is still quiet and unchanged. The American Sheet & Tin Plate Company is quoting $3.30 per box, Pittsburgh, for 14 x 20 100-lb. Coke Plates, making the price $3.49, delivered in New York. The Welsh market is unchanged at 11 shillings 6 pence.

There has just been issued by the Metallgesellschaft of Frankfurt am Main the eleventh annual statistical report on Lead, Copper, Zinc, Tin, Silver, Nickel, Aluminum and Quicksilver.

New York.

NEW YORK, September 14, 1904.

Pig Iron.—A considerable tonnage of Iron has been taken by a large Cast Iron Pipe interest, at privae terms, and there has been some buying of Basic Pig for New England delivery. Some good lots of Foundry Iron have also been placed in that territory. We continue to quote $14.75 to $15 for No. 1 Foundry, $14 to $14.50 for No. 2 Foundry and $12.75 to $13.25 for Gray Forge, tidewater delivery. Tennessee and Alabama brands are $13 to $13.50 for No. 2 Foundry and $12.50 to $12.75 for No. 3 Foundry.

Cast Iron Pipe.—No sales of any magnitude are reported, nor are there any contracts of any size pending. We quote for carload lots of Cast Iron Pipe $25 to $25.50 per gross ton for 6 to 10 inch, and $23 to $24 for 12-inch, at tidewater.

Steel Rails.—The market is very quiet. There are some inquiries, but buyers' views have been greatly influenced by the peculiarities of the situation.

Finished Iron and Steel.—The manufacturers of Structural Material report that the first effect of the lower prices has been to bring a large number of requests for the revision of earlier bids. In many cases this leads to the submitting of the same or even higher figures, because the decline had been anticipated by the sellers. The largest contract taken during the week was for 10,500 tons for the power plant of the New York Edison Company. A round lot of Steel Bolts for the tunnel has also been placed. We quote: Beams, Channels, Angles and Zees, 1.54½c. to 1.75c.; Tees, 1.60c. to 1.75c.; Bulb Angles and Deck Beams, 1.64½c. to 1.90c. Sheared Plates in carload lots are 1.54½c. to 1.65c. for Tank, 1.64½c. to 1.80c. for Flange, 1.74½c. to 1.90c. for Marine and 1.74½c. to 2.25c. for Fire Box, according to specifications. Refined Bars are quoted 1.40c. to 1.50c. and Soft Steel Bars 1.45c. to 1.55c.

Iron and Industrial Stocks.

NEW YORK, September 14, 1904.

With the exception of a slight halt occasioned yesterday by talk of unfavorable crop conditions, the market has advanced steadily since our last writing. The upward movement has extended all along the line, but the industrials were especially favored, some of which scored rather substantial gains. Transactions have been larger than at any time during this year with a single exception, last Monday reporting 1,300,000 shares. The heaviest advance was made by Locomotive common and preferred, the former gaining 5 points and the latter 7 points as compared with the quotations of a week ago. Steel was carried higher than at any time within a year, common reaching 16 last Monday and regaining this figure to-day after fractional fluctuations in the interval. The preferred is high to-day at 66⅞. Other notable gains were made by Car & Foundry common, which gained 3¾ points; Tennessee, which advanced 1½ points; Railway Spring common, which gained 1¼ points, and Pressed Steel preferred, which gained 1¾ points for the week. At 2 p.m. to-day the last quotations received on active stocks were as follows: Can common 4½ bid, 4¾ asked, preferred 47½ bid, 48 asked; Car & Foundry common 23⅝, preferred 81½; Locomotive common 27½, preferred 97½; Colorado Fuel 39½; Pressed Steel Common 34½; preferred 80¾; Railway Spring common 23¾, preferred 79¼; Republic common 8¾, preferred 43⅝; Sloss-Sheffield common 39¾, preferred 89; Tennessee Coal 48¾; United States Steel common 16, preferred 66⅞, new 5's 81⅜.

The stock of the Pittsburgh Trolley Pole Company was listed on the Pittsburgh Stock Exchange last week. The company is capitalized at $50,000, par value of the stock being $100, and has no bonds. It makes trolley poles and fittings for the tops of electric street cars. The company has been in existence for six years, and during that time the capital has been increased from $5000 to $50,000, and during practically all of that time the company has paid dividends at the rate of 10 per cent. a year.

The Sloss-Sheffield Steel & Iron Company's report for the quarter ended August 31 last compares as follows:

	1904.	1903.
Net profit from operation	$214,815	$364,928
Depreciation and charges to extra repair and reserve fund	.....	37,601
Balance	$214,815	$327,327
Interest and taxes	60,000	60,000
Surplus	$154,815	$267,327
Preferred dividend	114,000	114,000
Surplus	$40,815	$153,327
Previous surplus	2,400,395	2,071,716
Total surplus	$2,441,210	$2,225,043

The reduction in earnings for the quarter was caused partly by all of the union mines being on strike during the entire months of July and August.

Dividends.—The reports made at the annual meeting of the Canonsburg Steel & Iron Company last week showed the company to be very prosperous. A 3 per cent. dividend, payable after October 1, was declared.

General Electric Company has declared the regular quarterly dividend of 2 per cent., payable October 15.

American Can Company has declared a dividend of 2½ per cent. on the preferred stock, payable October 1. Books close September 22, and reopen October 1.

Otis Elevator Company has declared a quarterly dividend of 1½ per cent. on the preferred stock, payable October 15.

International Silver Company has declared a quarterly dividend of 1 per cent. on the preferred stock, payable October 1. Books close September 16, and reopen October 3.

United Shoe Machinery Company has declared a quarterly dividend of 1½ per cent. on the preferred stock, and 2 per cent. on the common stock, both payable October 15.

A meeting of the Board of Directors of the Crucible Steel Company of America will be held in Pittsburgh on Tuesday, September 20. At this meeting the statement now in preparation giving full details of the sale of the plant of the Clairton Steel Company to the United States Steel Corporation will be presented to the board. If approved, the statement will then be sent out to the stockholders.

The district offices of the American Steel Foundries Company, now located in the Frick Building, Pittsburgh, are to be removed to Alliance, Ohio.

Chicago.

FISHER BUILDING, September 14, 1904.—(*By Telegraph.*)

The result of the $4 cut in Plates and Structural Steel has been a disappointment to firms selling these commodities, as buyers show a strong disposition to delay purchases in the hope that something may turn up favorable to them. As a matter of fact, the predictions published widespread in the daily papers to the effect that Plates and Structural Steel would be cut $6 or $7 a ton had much to do with the present attitude of buyers. There is no doubt, however, that manufacturers will be able to hold prices at the new basis for Plates as long as they desire to do so, because the cuts made are thought by makers to be sufficiently low to prevent independent manufacturers from going much lower. The new price of 1.30c., Pittsburgh, on Plates 24 inches wide and narrower, which is $2 per ton less than the new base price on Plates wider than 24 inches, was made to meet the competition of Skelp mills and two or three producers of Narrow Plates who have been cutting prices $2 to $3 per ton on widths up to 60 inches, and have been selling Universal Mill Plates, Sheared Skelp and Narrow Sheared Plates on the basis of Bars without extras. The opinion is freely expressed that these firms will not find it profitable to go much lower than 1.30c. on such materials, and that the independent producers of Plates up to 60 inches will not be able to sell very much below the 1.40c. price on their product, if at all lower. It is a little different with Structural Steel, because the new price of 1.40c., base, Pittsburgh, is scarcely as low as the open price of some independent producers of the smaller Structural sizes of Angles, Beams and Channels. Even the sellers in this market are disappointed that somewhat lower prices were not named on Structural Materials. Following a cut on mill orders there has been a commensurate reduction on prices of Plates, Beams, Angles and Channels from Chicago warehouse. Another feature of the store market is the fact that one of the three large interests has withdrawn from the gentlemen's agreement between jobbers here and is a free lance in naming such prices as he thinks will secure business. This factor claims that he was compelled to take this step in order to protect himself against secret cuts and rebates made by other members of the trio. Whether this open competition will extend to all lines of Iron and Steel carried by the warehouseman it is not possible to say now. Store business as a result of the new prices has improved in much better proportions than mill business. There is nothing new to report in Pig Iron. Purchases are light and represent, as a rule, only current requirements. Neither Northern nor Southern prices have changed, and very little Southern Iron is coming into this market because of the scarcity of Iron due to the Coal strike. The Rail business has been quiet and no tonnage of any moment booked. But little business is being placed in Billets, and what is booked is done on the basis of $1 or $2 below the traditional association prices. While there has been some increase in Plate orders, it is not what was hoped for. Structural Steel received a slight impetus from the reduced price and orders placed are for immediate shipment, indicating that only such business is being placed as cannot wait any longer. Independent Sheet mills are sold ahead 30 to 60 days, and there is less disposition to cut prices than heretofore. Pipe and Tube interests report a good increase in business resulting from the reductions in Pipe named September 3. The city of Chicago is delaying the placing of its order for 14,000 tons of 24-inch Pipe. Rockport, Ohio, a suburb of Cleveland, has placed an order for about 800 tons of 6, 8 and 10 inch Cast Pipe. This makes a total of about 15,000 tons bought by this village in the last three months. Portland, Ore., has advertised for bids on quite a large tonnage. Old Materials have reached the zenith of their boom and are now on the down grade. Coke seems to grow a little stronger week by week, with a sufficiently improved buying movement to hold prices firmly.

Pig Iron.—The situation since last week's report is not materially changed, and we repeat prices. Nearly all the producers of Southern Iron are out of the market as far as Chicago is concerned, leaving the field practically in the hands of Northern furnaces. Large buyers of Basic Iron are again feeling the market, and it looks now as though they would have to depend upon Ohio furnaces for any required during the next two or three months, owing to the fact that practically the only two Southern makers of Basic are out of the market. In the following prices the minimum figures would represent, as a rule, the lowest price at which sellers would take fairly large orders for prompt shipment, while the higher prices would represent current single carload business, or the price named, as a rule, for delivery into 1905 on contract:

Lake Superior Charcoal	$14.75 to $15.00
Northern Coke Foundry, No. 1	14.00 to 14.50
Northern Coke Foundry, No. 2	13.50 to 14.00
Northern Coke Foundry, No. 3	13.00 to 13.50
Northern Scotch, No. 1	14.00 to 14.50
Ohio Strong Softeners, No. 1	14.80 to 15 05
Ohio Strong Softeners, No. 2	14.55 to 14.80
Southern Silvery, according to Silicon	14.15 to 15.15
Southern Coke, No. 1	13.65 to 13.90
Southern Coke, No. 2	13.15 to 13.40
Southern Coke, No. 3	12.90 to 13.15
Southern Coke, No. 4	12.15 to 12.40
Southern Coke, No. 1 Soft	13.65 to 13.90
Southern Coke, No. 2 Soft	13.15 to 13.40
Southern Gray Forge	12.15 to 12.40
Southern Mottled and White	11.90 to 12.15
Malleable Bessemer	13.50 to 14.00
Standard Bessemer	14.25 to 14.75
Jackson County and Kentucky Silvery, 6 to 10 per cent. Silicon	17.30 to 19.30
Alabama Basic	.... to 13.15
Virginia Basic	14.10 to 14.35

Billets.—A large Indiana Wire mill was in the market some time ago for Billets, and refused bids of $22, delivered, claiming that better than $20 had been offered. Local Forge shops here pay about $22 for Open Hearth Forging Billets. Business is light.

Rails and Track Supplies.—No confirmation can be obtained of the persistent rumors that the $28 official price has been shaded. These rumors are doubtless unfounded, and no change is likely to take place until the October meeting, at which the selling price for the succeeding 12 months will be fixed upon. It is true, however, that inducements are offered to Rail buyers in the way of great concessions made on Spikes and Splices. Light Rails, which are not protected by the sheltering arms of the pool, are sold at from $20 to $22 a ton, at maker's mill, with freights equalized to some extent on the basis of the Standard Section, the buyer being quoted a freight rate by all mills the same as his rate to his nearest mill. Angle Bars are unchanged at 1.35c. to 1.40c. Spikes are now quoted at 1.65c. to 1.70c. in car lots from mill and as high as 1.85c. in small lots from store. Track Bolts are selling at 2.20c. to 2.25c., base, from mill, with Square Nuts, and 10c. to 15c. extra for Hexagon Nuts, with an advance of about 15c. for shipment from store.

Structural Material.—We have been told all along that as soon as Structural Materials were reduced in price in proportion to the cost of Billets and the selling price of Bars and other Finished Materials a large tonnage would come out of its hiding, representing enterprises which have been held in abeyance until such a cut was made. While it is too early to form a definite conclusion as to the result of the $4 concession made by the mills, present indications are that the increase in the tonnage booked will not be at all proportionate to the cut in prices. There is some increase in business, but the demands for quick shipment indicate that these orders are for materials which are needed almost immediately and most of which would have been bought even at the old price. The new price still fails to put the independent bridge and Structural Iron shops on a competitive basis with the American Bridge Company on business calling for fabricated or erected work, and the indication is that the large producer will still continue to get whatever contracts it cares to figure, leaving to the independents only such structures as are considered too small or for other reasons undesirable. The new prices on Structural Material are as follows: Beams and Channels, 3 to 15 inches, inclusive, 1.56½c., Chicago; Angles, 3 to 6 inches, ¼-inch and heavier, 1.56½c.; Angles, larger than 6 inches on one or both legs, 1.66½c.; Beams, larger than 15 inches, 1.66½c.; Zees, 3 inches and over, 1.56½c.; Tees, 3 inches and over, 1.61½c., with the usual extras for cutting to exact lengths, punching, coping, bending or other shop work. Store prices on Structural Materials are 1.80c. to 1.90c. for Angles, Beams, Channels and Zees, base sizes, with 1.90c. to 2c. for 18, 20 and 24 inch Beams; Tees, 1.85c. to 1.95c. These prices are for either random lengths or cut to lengths.

Plates.—The new prices of 1.40c., Pittsburgh, or 1.56½c., Chicago, for Plates wider than 24 inches and up to and including 100 inches wide will have a tendency to restrict the tonnage of Plates put into this market by far Eastern mills, although the price is still by no means prohibitive; it will also make it more difficult for small Plate mills and Sheet mills not in the Plate Association to secure business because it will be unprofitable for them to go enough lower than the new price to secure a very large tonnage, and the new price of 1.30c., Pittsburgh, or 1.46½c., Chicago, for Plates from 6½ to 24 inches wide is hoped by the leading producers to have the result of greatly decreasing the competition from Skelp mills, Universal mills and small Plate mills that are limited to comparatively narrow sizes. But the new prices have not resulted in the rush of orders that had been looked for. This hesitation on the part of buyers is doubtless due to the fact that a cut of $6 or $7 was expected instead of the cut of $4 on regular Plate sizes. There has been some increase, of course, and it is hoped that as soon as buyers discover that mills are to be easily persuaded into another cut a delayed buying movement will set in that will be entirely satisfactory. The official price of 1.30c., Pittsburgh, for Narrow Plates applies only to Tank quality, as Flange quality of any width is to hold at the regular base price of 1.40c., Pittsburgh, for wide Plates. Warehousemen in Chicago who cater especially to the needs of Boiler and Tank manufacturers in Plates have made a reduction of $4 to $5 a ton from their former store price. There is not the same harmony in the price schedule of Plates from warehouse as has characterized the warehousemen up to recent-

ly, as one large interest has withdrawn from the gentlemen's agreement to maintain prices at certain figures. These prices range as follows, the lowest price indicating the lowest minimum of at least one large interest, while the higher prices represent the ordinary premium charged for small business from store: Tank Plate, in widths up to 100 inches, ¼-inch and heavier, 1.75c. to 1.85c.; 3-16 inch, 1.85c. to 1.95c.; Nos. 8 and 10, 1.90c. to 2c.; Nos. 12 and 14, 2c. to 2.10c.; No. 16, 2.10c. to 2.20c.; Flange quality, 25c. per 100 lbs. extra.

Sheets.—A gradual and steady increase in demand for Sheets is putting mills in a position where they are a little more independent on the matter of price than they have been for several months. Indeed, most of the independent Sheet mills are now booked ahead 30 to 60 days and are chary about making promises of prompt shipment. Prices rule about as follows for One Pass Blue Annealed: Nos. 9 and 10, 1.76½c.; Nos. 11 and 12, 1.86½c.; Nos. 13 and 14, 1.91½c.; Nos. 15 and 16, 2.01½c.; Box Annealed, Nos. 18 to 20, 2.01½c. to 2.06½c.; Nos. 22 to 24, 2.06½c. to 2.11½c.; No. 26, 2.11½c. to 2.16½c.; No. 27, 2.16½c. to 2.21½c.; No. 28, 2.26½c. to 2.31½c.; No. 29, 2.41½c. to 2.46½c.; No. 30, 2.51½c. to 2.56½c. The reduction in prices on Plates has resulted in a reduction on prices of Heavy Sheets, which are sometimes classed with Plates, made by large Chicago interests for shipment from store. These new prices make no difference between Blue Annealed and Tank quality in the heavier gauges, nor between Blue Annealed and Box Annealed in the lighter gauges. The store prices as revised are as follows: Nos. 8 and 10, 1.90c. to 2c.; No. 12, 2c. to 2.10c.; No. 14, 2.05c. to 2.15c.; No. 15, 2.15c. to 2.25c.; No. 16, 2.20c. to 2.30c.; No. 18, 2.30c. to 2.40c.; No. 20, 2.30c. to 2.40c.; No. 22, 2.35c. to 2.45c.; No. 24, 2.40c. to 2.50c.; No. 26, 2.50c. to 2.60c.; No. 27, 2.60c. to 2.70c.; No. 28, 2.70c. to 2.80c.; No. 29, 2.85c. to 2.95c. Galvanized Sheets show no change since last week, being offered at from 80 and 7½ to 80 and 10 discount, Pittsburgh, carload lots and larger, and selling from store here at 75, 10 and 5 and 75, 10 and 7½ discount from list.

Bars.—As far as can be ascertained in this market no change has taken place in the official price of Steel Bars thus far, that figure remaining at 1.35c., Pittsburgh, base, half extras, or 1.51½c., Chicago. Buying is almost at a standstill and expectancy of lower prices characterizes the market. Iron Bars are firm at 1.35c., base, half extras, car lots, Chicago, but business is extremely quiet. The Hoop business is very quiet, prices being unchanged at 1.71½c. rates, full extras, in car lots, Chicago. Soft Steel Angles smaller than 3 inches on one leg, are unchanged in their price of 1.45c., base, Pittsburgh, or 1.61½c., Chicago. Store prices are as follows: Iron Bars, 1.70c. to 1.75c., base, full extras; Steel Bars, 1.70c. to 1.75c., base, half extras; Hoops, 2.10c. rates, full extras.

Merchant Steel.—Buying, which was fairly good last week, has dropped off decidedly, as buyers are evidently bidding for price concessions. Meanwhile the official prices remain unchanged as follows: Open Hearth Spring Steel to the general trade, 1.90c. to 2.10c.; Smooth Finished Machinery Steel, 1.76½c. to 1.81½c.; Smooth Finished Tire, 1.71½c. to 1.76½c.; Sleigh Shoe, flat, 1.56½c. to 1.61½c.; Sleigh Shoe, concave and convex, 1.66½c. to 1.71½c.; Cutter Shoe, 2.25c. to 2.35c.; Toe Calk Steel, 2.06½c. to 2.11½c.; Crucible Tool Steel, 6½c. to 8c.; special grades of Tool Steel, 13c. and up; Shafting at 52 per cent. in car lots and 47 per cent. in less than car lots; Railway Springs, carload lots, 1.71½c. to 1.86½c., with reductions for larger quantities.

Merchant Pipe.—A good buying movement has resulted from the cut on Pipe prices of September 3, though hardly what was expected. These new prices, as announced last week, are as follows:

	Steel.		Iron.	
	Black.	Galv.	Black.	Galv.
⅛ to ¼ inch	69.35	53.35	67.35	51.35
⅜ and ½ inch	73.35	61.35	71.35	57.35
¾ to 6 inches	77.35	67.35	75.85	65.35
7 to 12 inches	72.35	57.35	70.85	55.35

Boiler Tubes.—Buyers are still holding off and purchasing only their actual current necessities. The discounts for less than carload lots, Chicago, are as follows:

	Steel.	Iron.	Seamless Steel.
1 to 1½ inches	46.35	41.35	52.35
1¾ to 2¼ inches	58.35	41.35	40.35
2½ inches	60.35	46.35	43.35
2¾ to 5 inches	66.35	53.35	up to 4 in. 50.85
6 to 13 inches	58.35	41.35	....

Carload buyers are given a two-point better discount than the above. Warehouse prices on Boiler Tubes for delivery from store, Chicago, are as follows:

	Steel.	Iron.	Seamless Steel.
1 to 1¼ inches	42½	37½	40
1¾ to 2½ inches	52½	35	37½
2½ inches	55	37½	40
2¾ to 5 inches	62½	47½	47½
6 inches and larger	52½	35	..

Cast Iron Pipe.—The city of Chicago is still delaying the purchase of the 14,000 tons of 24-inch Pipe mentioned in our last issue. Portland, Oregon, will shortly close something like 1000 tons. Business is excellent in a multitude of small orders for car lots, 50-ton, 100-ton and 200 and 300 ton lots, sales of the Chicago office of the leading producers averaging nearly 1000 tons a day. Prices are held firm on the basis of $25.50 for 4-inch Water Pipe, $26.50 for 6-inch and heavier, and $1 extra for Gas Pipe. These prices, however, will be shaded on very large lots.

Old Materials.—It is evident that the predicted decline in prices of Old Materials has set in, and possibly the reduction on Structural Steel and Plates may have had something to do with it, although general market conditions have not for a long time warranted the extremely high prices named by dealers on Old Materials. The Atchison, Topeka & Sante Fé road sold all of its 5000-ton lot of Old Materials except about 1000 tons of Old Iron Rails, which it is holding because even the highest bid, $16.05, is considered too low for the Rails. We reduce Iron Fish Plates 25c., Iron Car Axles 50c., Nos. 1 and 2 Railroad Wrought 25c., Dealers' Forge 50c., Iron and Steel Axle Turnings 25c., No. 1 Cast Scrap 50c. in the following list, which represents about the prices received by railroads and other large producers for their Scrap from dealers and consumers. As a general thing dealers will not sell for less than 50c. above the minimum price named in this list, and they will not pay within 25c. to 50c. of the lowest price for ordinary miscellaneous small lots. We quote, per gross ton:

Old Iron Rails	$16.00 to $16.50
Old Steel Rails, 4 feet and over	11.75 to 12.00
Old Steel Rails, less than 4 feet	10.50 to 11.00
Heavy Relaying Rails, subject to inspection	20.50 to 21.50
Heavy Relaying Rails, for side tracks	18.00 to 20.00
Old Car Wheels	11.00 to 11.50
Heavy Melting Steel Scrap	10.00 to 10.50
Mixed Steel	8.50 to 9.00

The following quotations are per net ton:

Iron Fish Plates	$13.50 to $14.00
Iron Car Axles	16.00 to 16.50
Steel Car Axles	14.00 to 14.50
No. 1 Railroad Wrought	11.75 to 12.25
No. 2 Railroad Wrought	10.75 to 11.25
Shafting	12.50 to 13.00
No. 1 Dealers' Forge	9.00 to 9.50
Wrought Pipes and Flues	8.00 to 8.50
Iron Axle Turnings	7.25 to 7.75
Soft Steel Axle Turnings	7.25 to 7.75
Machine Shop Turnings	7.00 to 7.50
Cast Borings	4.00 to 4.50
Mixed Borings, &c.	4.00 to 4.50
No. 1 Mill	7.00 to 7.50
Country Sheet	5.00 to 5.50
No. 1 Boilers, cut to Sheets and Rings	8.00 to 8.50
No. 1 Cast Scrap	10.50 to 11.00
Stove Plate and Light Cast Scrap	9.00 to 9.50
Railroad Malleable	9.50 to 10.00
Agricultural Malleable	9.00 to 9.50

Metals.—Some improvement is noted in business, but prices are unchanged, as follows: Spelter is quoted at 5c. to 5⅛c. for car lots, and 5.25c. to 5⅜c. for small lots. Casting Copper is being held at 12¾c. and Lake at 13c. Pig Tin is now quoted at 28c. to 28¼c. Pig Lead has advanced $2 a ton, and is now quoted at 4.20c. for 50-ton lots, 4.30c. for car lots and 4.40c. to 4.50c. for less than car lots. Sheet Zinc is 6⅛c. for car lots of 600-lb. casks and 6⅜c. for less than car lots. Old Metals are stronger, and several advances in prices are noted. We quote Copper Wire and Heavy, 11¼c. to 11⅜c.; Copper Bottoms, 10c.; Copper Clips, 11c. to 11⅜c.; Red Brass, 9⅞c.; Red Brass Borings, 8c.; Yellow Brass, Heavy, 7¾c.; Yellow Brass Borings, 6½c.; Light Brass, 5⅞c.; Tea Lead, 4c.; Zinc, 4.25c.; Pewter, No. 1, 17½c.; Block Tin Pipe, 22½c.

Coke.—The average foundryman here who wishes to take no chances on the quality of his Coke pays $2 a ton at the ovens, or $4.25, Chicago, for strictly 72-hour Connellsville quality in single car lots, but in blocks of 100 tons or thereabouts this price is shaded 10c or 15c. Cokes that do not enjoy the reputation of Connellsville, although they may be just as good, sell at from $1.75 to $1.95 at the ovens, to which must be added $2.65 for freight to arrive at the Chicago price. Ovens in Wise County, Va., continue to have an advantage of 40c. a ton in freight, most of which is given away by them to the buyers, making the ruling price in Chicago for these Cokes from $4.10 to $4.25 per ton.

The growth of the cement industry in the United States is shown by the records of production of the two great classes of cement somewhat as follows: "In 1850 there were 35 cement mills in the country, with an average annual capacity of 14,500 barrels, all of which was natural cement. In 1890 there were 16 Portland cement mills, of an average capacity of 21,000 barrels, and 63 natural cement mills, of an average capacity of 98,400 barrels. In 1902 there were 65 Portland mills, of an average capacity of 265,000 barrels per annum, and 62 mills producing an average of 199,000 barrels of natural cement."

HARDWARE.

A GREAT deal has been said at one time or another in regard to special brands, which occupy so large a place in the Hardware field. How large this place is will be indicated by many a jobber's catalogue, in some of which the manufacturers' brands are few and far between. The manufacturers who suffer most on account of this disappearance of their names from the trade have often expressed their opposition to the practice in a spasmodic and helpless way, as they have felt the steady pressure brought to bear on them to meet their customers' views in this regard, and to send out goods which give no hint of the factory from which they emanated. Some, indeed, have resolutely refused thus to give up their identity and do what may be termed a hand to mouth business, as it yields only a present profit and has no permanence or promise for the future, and have refused to put other than their own brands on their best goods, limiting their making of special brands to second or third or even lower qualities. Most manufacturers, however, it is to be feared, have felt themselves obliged to fall in with the trade tendency, which makes special brands of Tools and many other lines to constitute so large a proportion of those handled by the merchant. They felt themselves helpless to stem the tide and have yielded far more than their judgment justified.

In view of this state of things the producers of Hardware are to be congratulated not only that they have a strong organization in the American Hardware Manufacturers' Association, but that this association is going to take up the subject of special brands and discuss it with the jobbers at the Atlantic City convention next November. This should result in accomplishing something for the correction of existing evils, to the advantage in various ways of the manufacturers directly concerned. It is a gratifying sign that the manufacturers are thus endeavoring to make their organization one of practical utility, as it secures a thorough discussion of matters in which its members are concerned and gives opportunity for concerted action where this can advantageously be taken.

The manufacturers will doubtless bear in mind that it will not be sufficient for them to indulge in mere generalities. It will be necessary for them to go into the matter systematically and carefully in a businesslike way to ascertain the actual facts and to determine the course to pursue with a view to diminishing or doing away with existing evils. This will call for a thorough investigation as to the conditions which prevail, not only in a general way, but with as much detail and specific illustration as may be obtainable. As the subject is considered especially from the manufacturers' point of view, it will be seen that there are many subsidiary questions which enter into it and must be considered if an attempt is made to reach legitimate conclusions and to take wise and effective action. It is, therefore, proper that manufacturers should endeavor to get at the facts in the case and to bring out detailed and definite information on such points as the following:

The kinds of goods in which special brands are most generally used.

The quality of special brands, and particularly the question as to the proportion of goods bearing special brands which are of lower quality than the manufacturers' own best brands.

Whether manufacturers can count upon continuing as makers of a given special brand or are liable to have business taken away from them by some one who underbids them.

The extent to which special brands are subject to competition between manufacturers.

The increased cost of making special brands as compared with the manufacturers' own brands of the same quality.

The annoyance and expense connected with the making of special brands in small quantities.

The extent to which special brands are sold by the manufacturers at lower prices than the corresponding grades of the manufacturers' brands.

The value to a manufacturer of an established reputation, and the manner in which the making of special brands tends to deprive him of this.

Whether there are any advantages which compensate the manufacturers for the disadvantages connected with the manufacture and sale of special brands.

In their endeavor to secure this information we bespeak the hearty and frank co-operation of manufacturers on any lines in which special brands are used. The various bearings of the subject and the principles which apply to it are of direct interest not only to the manufacturers, but also to the jobbers and retailers, and even to the consumers, and the general welfare of the trade will be promoted by its thorough discussion in our columns. In this connection the letters which are given on another page will be of interest, touching as they do upon some of the aspects of this many sided problem.

Condition of Trade.

While complaints are still made by manufacturers of the reluctance of the trade to purchase freely, this is not to be regarded as showing that the market is in an especially unsatisfactory state. There has been unquestionably a good deal of conservatism in the placing of orders and a general distrust of the market for raw material, which has certainly been justified by the declines which have taken place in steel and iron and their cruder products, including several lines of Heavy Hardware. The action of the great producers of these raw products in reducing prices, even though in some cases this was simply bringing nominal quotations down to a level which makes them actual, meets with general approval as removing a fictitious basis for values and preparing the way for business on a safer level. The effect of this clearing of the atmosphere begins to show itself in an improved feeling and a disposition to take a more cheerful view of the prospects for business. It is, indeed, true that there have been during the quiet months and in the presence of a yielding market for the raw material important reductions in the prices of many lines, and this undoubtedly has tended to make the trade more suspicious of the Hardware market as a whole than the circumstances justify. Most Hardware lines, in fact, have been held with practically no change, except as slight concessions here and there have been made during the period of dull trade with a view to securing business. In a great many leading lines manufacturers have refused to do even this, and the market has endured the strain put upon it remarkably well. Some of the heavy goods, while not as yet showing signs of recovery, are probably nearing the point where the decline will naturally check

itself and the withdrawal of extreme quotations will be in order. The volume of business shows signs of increase, and from many parts of the country the jobbers who come principally in contact with the smaller trade give quite encouraging reports. The Presidential canvass is apparently going to interfere but little with current trade. The crops, either in volume or value, are regarded as sufficiently assured to lay a fine basis for prosperous general conditions. Strikes are still making disturbance and are to be held responsible not a little for the slackening of pace and the curtailing of enterprise, but on the whole the outlook is better in this regard, especially as in several cases the strikes have been unsuccessful and those affected are thus free from the blight which would result from labor dictation. The coming down to a reasonable level in values for manufacturing products in the iron and Hardware lines, while unpleasant in the process, is unquestionably for the general welfare of the country, especially when its international trade relations are considered. Taken all in all, the situation is encouraging and the way open for manufacturers and merchants to prosecute their business with energy, enterprise and confidence.

Chicago.

Business in cold weather goods is a little bit curtailed by the two weeks' warm weather which we have had. Thus far September has been a much warmer month than August. Demand for Corn Knives and Huskers is increasing, jobbers receiving rush orders for good quantities of these articles, indicating that the retailers' original estimate of the corn crop was not sufficiently large. Builders' Hardware is exceptionally active in the city of Chicago, and building permits for the month of August exceed those of the same month last year by 169 buildings, aggregating 8000 feet frontage and costing over $700,000. Altogether there were permits for 717 buildings at an estimated cost of $3,548,000. The Orr & Lockett Hardware Company secured the contract for Hardware for the buildings of the American Legation at Pekin, China. This order will be filled with goods of the Lockwood Mfg. Company, and the contract stipulates that the entire shipment shall be placed on board Government transport at San Francisco not later than October 10. The order was a large one, though figures are withheld. No noteworthy changes in prices on Hardware of any kind have come to light in this market, and there is a feeling in the trade that the reductions in prices on heavy Iron and Steel may not be reflected in reductions in the lighter Hardware goods at all. Business in Nails and Wire continues to be good, buyers evidently doing a little more than supplying immediate needs.

Louisville.

Belknap Hardware & Mfg. Company.—The two events of the week are the public announcement of decline in Billets, which had been practically discounted by buyers, and the collapse of the Chicago strike. This latter could easily have been predicted for some weeks, as the violent measures threatened by the leaders betokened desperation. Mr. Donnelly could not make his promise good. Such people never can bring a realization of their extravagant predictions, thanks to the prevalence of common sense, and all fear of a widespread meat famine is over.

All of those good people who took vows on themselves to eat fish instead of meat can now feel themselves absolved, and another chapter in strikes, costs and results may be writ in large characters.

The decline in Billets, though heavy, is evidently not regarded serious or the United States Steel securities would have reflected it more in their price. What the mills should do is to reduce the price on large Rail sections and encourage the railroads to extensive improvements, which are recognized as needed. The American, like the Englishman, has a dislike of being "done." When Rails and Billets are as far apart as they are now it is very plain that this is just what is happening to him.

The beautiful autumn weather has encouraged trade until it is now at its fullest volume. Railroad earnings promise to be excellent.

Cleveland.

The W. Bingham Company.—Fall trade in the Hardware line is opening up in good shape. Our salesmen, heads of departments, stockmen and order boys have had their vacations, and have come back to tackle the fall business with renewed vigor. A large volume of business is coming to the Cleveland market at the present time, and we are receiving well assorted orders through the road salesmen and mail department.

Orders that were placed early for Stove Boards, Coal Hods, Elbows, Axes, Meat Cutters and Stuffers are being filled, and the goods are now going forward to customers freely. Many orders are coming to us for Skates, Scoops, Coal Shovels, Weather Strip and Sheet Iron; in fact, the full line of fall goods is being ordered by the trade, portending a large volume of business this fall. Why should we not have it? Banks are full of money, which is awaiting investment; farmers are getting good prices for their produce; there are large crops of grain of all kinds; fruit is in abundance. Artisans, for the most part, when they want to work are fully employed. Strikes are being settled, and there is no physical disturbance on account of politics. Nearly every one feels that he is to have a business of his own to look after, and will take care of it to the best of his ability.

The recent drop in price of Nails and Wire has been an incentive for merchants to place liberal orders. Low prices have been made by some mills, but they seem to be unable to fill orders promptly. Nothing is cheap if you cannot get hold of it when you want it.

Prices on all kinds of Hardware are and have been for some time back extremely low, and we see no reason why any one should hesitate at all in buying for his immediate and near future wants liberally. Our advice to customers is to keep their stocks well assorted, that they may care for their trade promptly.

On the whole, fall trade is starting out quite satisfactorily, and if orders keep coming in as freely as they have in the last two or three weeks we will have to work overtime to give satisfactory results to our customers. Dealers in general have indulged so much in hand to mouth business in the last three or four months that they will now have to order more liberal quantities to keep their stock in good shape.

St. Louis.

Norvell-Shapleigh Hardware Company.—A study of the foreign exhibits at the World's Fair in the Hardware and Cutlery lines impresses upon our rather self sufficient American minds the fact that "there are others." The writer has found service as a juror a very entertaining and interesting experience. There is a great deal we can learn from our foreign friends. The Germans have covered themselves with glory at this exhibition. Germany and Japan are prominent on all sides, in every art and industry. The examples illustrating the German secession movement in art in the Varied Industries Building should not be missed under any circumstances. It is certainly refreshing to have a change from classical lines.

In view of the great care and expense that our foreign cousins have taken in their exhibits, it seems particularly unfortunate that our great manufacturers of Builders' Hardware are conspicuous by their absence. Let us hope at some future exposition we will not only have the pleasure of studying American Hardware, but that they will portray an American school of art with distinctly American names. Many of our own manufacturers would no doubt benefit artistically and commercially by a close study of some of the wonderful exhibits.

Portland, Oregon.

Corbett, Failing & Robertson.—An army of 40,000 hop pickers moving on the hop yards of Oregon, and that, too, confined to some six counties, is to us a more interesting bit of news than what the Japs and Slavs are doing. Present prospects of yield and price indicate that hops should pour upward of $4,375,000 into

the laps of the comparatively few engaged in the industry.

An abnormal condition prevails in the wheat market in Eastern Oregon, Washington and Idaho this year. Millions of bushels are going East by rail instead of moving to seaboard to go foreign as heretofore. The high price of wheat in Chicago market and the high freight rates demanded from coast ports by ship owners allow railroads to benefit by new conditions.

Clearings increased 22 per cent. over same week of a year ago, showing that some business is doing. Real estate transactions for past eight months of year are more than double those of same months in 1903. On the face of returns, business and conditions show up well; still there is a hesitancy and a spirit of hold back that handicaps the present and bodes ill for the future.

Nashville.

GRAY & DUDLEY HARDWARE COMPANY.—We are pleased to report that business is increasing in volume daily, and the movement of winter goods is beginning to be quite heavy. Nearly all of the orders contain specifications for Coal Hods, Heating Stoves, Stove Pipe, Toy Wagons, Lanterns, and similar lines. The sales for the month of September will compare favorably with last year, and possibly run a little ahead of last September.

All of the jobbers, of course, have adopted the reduced prices on Nails and Wire, and there is an increased movement of these goods, especially Nails. Most of the retail trade seems to know the cause of the reduction in prices of these lines, and it has not had any effect upon the prices of these goods.

Collections are improving, and money is coming in from the country very freely.

San Francisco.

PACIFIC HARDWARE & STEEL COMPANY.—San Francisco is dressed in holiday attire in honor of the conclave of the Knights Templar, now being held in this city. Our streets are crowded with visitors from all over the country and present a very active appearance. This activity is hardly justified by business, which is not quite as rushing as we are accustomed to see it at this season. Unfortunately, California has not had as good crops as we usually expect, and business will naturally suffer somewhat in consequence. It must not, however, be assumed that this is anything more than a temporary condition, and our people are, in fact, not a bit anxious about the future. The shortage of crops has also, to some extent, affected collections, but our people have learned conservatism and very few buyers will not be able to pay up this fall. Possibly business is affected even more by the market conditions and the reports that reach us of lower prices for steel and steel products. This naturally scares buyers, and when the market is again settled we are in hopes that business will revive.

St. Paul.

FARWELL, OZMUN, KIRK & CO.—Fall business is fully up to expectations, and equals that of last year. While the weather is not entirely favorable, threshing and stocking are progressing. The proceeds of the crops are expected to be as large as last year, and trade prospects are equally good.

NOTES ON PRICES.

Wire Nails.—Buying has been stimulated to an extent unusual at this season, owing probably to low stocks and the recently made attractive prices. These are quite firmly maintained on the basis of $1.60 for carload lots and $1.65 for less than carload lots, both f.o.b. Pittsburgh. It is understood that these prices are sometimes shaded, frequently in the guise of freight charges. There are also rumors of irregularities in quotations in strongly competing territory, amounting in some instances to $1 or more per ton. The most prominent manufacturers are refusing to accept orders for execution after 30 days. The tendency to do away with arbitrary differentials between the jobbing and retail trade is marked under the present conditions, the quotation of $1.60, Pittsburgh, as a rule, being accessible to carload buyers of either class. Jobbers are apparently anxious to retain their business, as they are selling Nails at prices closely approximating those of manufacturers. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

Carload lots	$1.60
Less than carload lots	1.65

New York.—Small lots from store and less than car lots from factory are moving quite freely. Inquiries for prices have been more frequent during the past week. Buying is along conservative lines, being confined to small lots in the majority of cases. New York quotations are as follows: Single carloads, 1.79½; small lots from store, $1.85 to $1.90.

Pittsburgh.—Volume of business in Wire Nails is quite heavy, considering that this is the season of the year when demand is usually quiet. The lower prices recently made are being well maintained, the only disturbing factor being that in some cases jobbers' prices are being made to the retail trade. It is said that the leading Wire Nail mills are refusing to sell further ahead than 30 days at present prices. We quote Wire Nails as follows: In carload and larger lots to jobbers, $1.60; carload lots to retailers, $1.65; less than carload lots to jobbers, $1.65; less than carload lots to retailers, $1.75.

Cut Nails.—The action of the Cut Nail Association at their meeting, held the 8th inst., took the form of making official the lower prices for Steel Nails which for some time have been more or less general even to the smaller trade, while a slightly lower figure has in many cases been made by some of the mills. The present association quotations are as follows: $1.60 and $1.65 for carload lots and less than carload lots, respectively, f.o.b. Pittsburgh. These quotations in a general way represent the market, but in some cases these prices can be shaded to large buyers about 5 cents. In the East Iron Nails are still quoted at the same price as Steel Nails, but in territory west of Pittsburgh Iron Nails are quoted in carload lots, f.o.b. Pittsburgh, at $1.65, with an advance of 10 cents in less than carload lots.

New York.—The prices made by the Cut Nail Association on the 8th inst. did not materially affect local prices, as these had been based upon prices which had been ruling for some time before the meeting was held. Cut Nails are in fair demand, and orders are for larger quantities than usual. Quotations are as follows: Carloads on dock, $1.74; less than carloads on dock, $1.79; small lots from store, $1.85.

Pittsburgh.—The Cut Nail Association held a meeting last week, but made no change in official prices. However, these official prices have been merely nominal for some time, as actual prices of Cut Nails have been at least 10 cents a keg under them. We quote: Steel and Iron Cut Nails at $1.60 in carloads and $1.65 in less than carloads. In exceptional cases and for large orders our lower price has been shaded about 5 cents a keg.

Barb Wire.—Demand is less in volume than was expected as the result of the large reduction recently made in price. Buyers are pursuing a conservative course and are providing only for nearby requirements. Leading mills, it is understood, are refusing to accept orders at current prices for a longer period than 30 days. The tendency toward doing away with former differentials between the various classes of trade is marked. The regular schedule of prices is as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

	Painted.	Galv.
Jobbers, carload lots	$1.75	$2.05
Retailers, carload lots	$1.80	2.10
Retailers, less than carload lots	1.90	2.20

Pittsburgh.—A fair amount of new tonnage is being placed, but the trade is not buying as liberally as anticipated when the recent heavy reduction in prices was made. We understand the leading mills refuse to sell ahead at current prices for longer than 30 days. Prices are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

	Painted.	Galv.
Jobbers, carload lots	$1.75	$2.05
Retailers, carload lots	1.80	2.10
Retailers, less than carload lots	1.90	2.20

Smooth Fence Wire.—An increase of business is reported by mills, this having become more marked during the week, as the result of the reduction in prices recently made. Many orders are being held back, no doubt, on account of uncertainty on the part of some of the trade as to whether lower prices will not develop. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

Jobbers, carloads	$1.45
Retailers, carloads	1.50

The above prices are for base numbers, 6 to 9. The other numbers of Plain and Galvanized Wire take the usual advances, as follows:

	6 to 9	10	11	12&12½	13	14	15	16
Annealed	Base.	$0.05	.10	.15	.25	.35	.45	.55
Galvanized	$0.30	.35	40	.45	.55	.65	1.05	1.15

Pittsburgh.—A heavy tonnage is being placed in Fence Wire, consumers taking advantage of the recent reduction in prices. We quote as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

Jobbers, carloads	$1.45
Retailers, carloads	1.50
Less than carloads	1.60

The above prices are for base numbers, 6 to 9. The other numbers of Plain and Galvanized Wire take the usual advances.

Tacks.—The manufacturers of Tacks do not make much complaint in regard to the volume of business when it is considered in the light of the general condition of trade. Prices are, however, as they have been for some time, low and irregular, so that, on the whole, the market is in a somewhat demoralized condition. Tacks are thus, as usually, a troublesome line for the careful buyer, inasmuch as there is considerable diversity in the quotations of the manufacturers, whose discounts on the same kind of Tacks frequently vary from 5 to 10 per cent. In a general way, prices are lower than during the first six months of the year, and manufacturers refer to some of the prices made as from 10 to 20 per cent. below cost. In this condition of things some of the makers are refusing to meet the extreme quotations of their competitors, preferring not to sell goods without profit.

Axles.—The manufacturers of Axles generally unite in referring to the demand thus far this year as having been disappointing. There is some difference of opinion as to what the future course of the market will be, but some indications are referred to of an improvement in the demand during the remainder of the year and with the opening of 1905. The market has been a good deal unsettled in the matter of price, and considerably lower quotations represent existing prices as compared with those which prevailed a few months ago. It is, indeed, said that lower prices have been quoted within the past few months than have ever been made in the history of the business. Some of the leading manufacturers do not attempt to follow this competition, and there is thus a good deal of irregularity in existing quotations. The course of things in the iron market has naturally weakened the prices of such goods as Axles, which lie so near the raw material, and a large number of Vehicles remaining unsold in the repositories and warehouses in some sections of the country will prevent as early a call upon the Axle manufacturers for a new supply of their product as would otherwise be the case.

Scythes.—Most of the manufacturers of Scythes have issued their catalogues and quotations for next season. There is not any attempt at uniformity in list prices, but the same net prices are reached by means of the amounts deducted in dealing with the various classes of buyers. We give below the lists of three of the manufacturers, which will be of interest as showing the lines of goods they are making and the form in which their quotations are presented. The prices are regulated according to the familiar method of having classified lists of jobbers, who are divided into two classes, which, after the pattern of the Shovel Association, may be termed the Sub Rosa and the A houses. There is 25 cents per dozen difference in the amount deducted for these two classes. Beyond this it is understood that there is to be a rebate of 50 cents per dozen for good behavior, or conformity to the wishes of the association in regard to the exclusive buying of association goods. The opinion, however, is expressed that it is not likely that there will be much temptation for merchants to transgress in this way, inasmuch as the association seems pretty thoroughly to control the situation. By a comparison of the prices named below with those which prevailed last season it will be seen that a very substantial advance has been made.

THE AMERICAN AXE & TOOL COMPANY, Glassport, Pa., has issued an attractive catalogue with illustrations, and full explanatory matter in which it announces the following prices, which are subject for the retail trade to an abatement or discount of $2, f.o.b. Glassport, Pa., freight being equalized with factory nearest point of destination. These prices cover shipments up to January 1, 1905:

Grass Scythes.—Bronzed, Painted and Polished Finishes.

	Per dozen boxed.
Grey Eagle, natural finish, cutting edge only polished	$8.00
Grey Eagle, bronzed web, cutting edge only polished	8.20
Clipper, bronzed web, edge of back and cutting edge polished	8.20
Clipper, edge of back and web polished	8.60
Clipper, bronzed web, both backs and cutting edge polished	8.50
Clipper, polished web, both backs polished	8.75
Clipper, both webs and both backs polished	9.00
Clipper, both webs, both backs and set polished	9.25
Western Dutchman, wide heel, brzd. web, edge of bk. pol'd.	8.20
Western Dutchman, wide heel, web and edge of bk. polished	8.60
Western Dutchman, wide heel, brzd. web, both bks. polished	8.50
Western Dutchman, wide heel, web and both backs polished	8.75
German or Cast Steel Waldron, full set, polished web	8.50
German or Cast Steel Waldron, half set, bronzed web	8.00
German or Cast Steel American, full set, polished web	8.50
German or Cast Steel American, half set, bronzed web	8.00
German Steel, beaded, bronzed web	8.00
Red Rover, flat web, edge of back polished	8.60
Salt Grass, half set, bronzed web, edge of back polished	8.20
Salt Grass, full set, polished web	8.50
Salt Grass, web and edge of back polished	8.60
Salt Grass, web and both backs polished	8.75
John U. Hubbards' Diamond Blade, web and both backs polished	8.75
John U. Hubbards' Diamond Blade, made from English steel, ex. finish	9.25
Solid Steel, web and both backs polished	8.75
Clipper Concave, both webs and both backs polished	9.00
Cutlass Steel, web and both backs polished	8.75
Matchless, beaded, web and both backs pol'd, ex. oil finish	9.25

Bush, Weed and Bramble Scythes.

Bush, painted red, cutting edge only polished	$8.25
Bush, full set, polished web	8.75
Weed, painted red, cutting edge only polished	8.25
Weed, Western Dutchman, wide heel, same finish as No. 46 Grass	9.50
Bramble, half set, painted red, cutting edge only polished	8.25
Bramble, Waldron, full set, polished web	8.75
Bramble, Waldron, half set, painted red (New Orleans)	8.25

Clover and Grain Scythes.

Clover, half set, painted red, cutting edge only polished	$10.00
Clover, full set, web polished	10.50
Grain, Clipper, bronzed web, edge of back polished	10.25
Grain, Clipper, bronzed web, both backs polished	10.50
Grain, Clipper, web and both backs polished	11.00
Grain, German or Cast Steel, half set, painted red	10.00
Grain, German or Cast Steel, half set, bronzed finish	10.25
Grain, German or Cast Steel, full set, polished web	10.50

The following are furnished under either the Blood or Hubbard & Blake brand:

Grass Scythes.

Clipper, enameloid finish, cutting edge only polished	$8.00
Western Dutchman, enameloid fin., cutting edge only pol'd	8.00
Clipper, enameloid finish, edge of bk. and cutting edge pol'd	8.20
Western Dutchman, wide heel, same finish as No. 120	8.20
German or Cast Steel Waldron, half set, enameloid finish, cutting edge only polished	8.00
German or Cast Steel American, half set, enameloid finish, cutting edge only polished	8.00
German Steel, beaded, enameloid finish, cutting edge only polished	8.00
Salt Grass, half set, enameloid finish, edge of back and cutting edge polished	8.20

Bush, Weed and Bramble Scythes.

Bush, enameloid finish, cutting edge only polished	$8.25
Bush, enameloid finish, edge of back and cutting edge pol'd	8.45
Weed, enameloid finish, cutting edge only polished	8.25
Weed, enameloid finish, edge of back and cutting edge pol'd	8.45
Bramble, half set, enameloid finish, cutting edge only pol'd	8.25
Bramble, Waldron, half set, enameloid finish (New Orleans)	8.25

Clover and Grain Scythes.

Clover, half set, enameloid finish, cutting edge only pol'd.	$10.00
Grain, German or Cast Steel, half set, enameloid finish	10.00
Grain, Clipper, enameloid finish, edge of back and cutting edge polished	10.25

DUNN EDGE TOOL COMPANY, Oakland, Maine, for whom Wiebusch & Hilger, 9 to 15 Murray street, New York, are agents, announce the following revised list, which is subject to a discount of 50 cents per dozen on shipments prior to January 1, 1905:

Grass and Lawn Scythes.—Ground Sharp and Boxed.

Silver Steel, pol'd on cutting edge only, natural oiled finish	$6.50
Painted Clipper, cutting edge polished, painted green	6.50
Black Clipper, cutting edge polished, natural oiled finish	6.50
Rough and Ready, cutting edge polished, natural oiled finish	6.50
Silver Steel Dutchman, Dutch heel, same finish as No. 1	6.50
Bronze Clipper, edge of back polished, web bronzed	6.70
Honest Dutchman, Dutch heel, same finish as No. 2	6.70

Golden Clipper, web polished, heel and set bronzed	7.00
American Waldron, full set, web pol'd, natural oiled finish.	7.00
Tool Steel, web polished, natural oiled finish	7.00
Damascus Blade, ribbed, backs pol'd, natural oiled finish..	7.50
Black Champion, double ribbed, bks. pol'd natural oiled fin.	8.00
Clipper (Standard), web and bks. pol'd, heel and set bronzed	7.25
Solid Steel, ribbed, web and bks. pol'd, natural oiled finish	7.25
Fine Cutlery Steel, ribbed, same finish as 6a	7.75

Bush, Weed and Bramble.

Bush, ribbed, painted greed or red	$6.75
Weed, ribbed, painted green or red	6.75
Bramble, ribbed, painted green or red	6.75

Grain and Clover Blades.

Silver Steel Grain, cutting edge polished, painted green	$8.50
No. 1 Clipper Grain, cutting edge polished, painted green	8.50
Silver Steel Clover Blade, natural oiled finished	8.50
Bronzed Clipper Grain, edge of back polished, web bronzed	8.75
Golden Clipper Grain, web polished, heel and set bronzed	9.00
Tool Steel Grain, web polished, natural oiled finish	9.00
Waldron Grain, full set, web polished, natural oiled finish	9.00
Clipper Grain, bks. pol'd, web painted, heel and set bronzed	9.00
Solid Steel Grain, backs and web pol'd, natural oiled finish	9.50

DAVID WADSWORTH & SON, Auburn, N. Y., are using also what may be termed the low list, as above. It is as follows, subject to a discount of 50 cents per dozen:

Grain Scythes.—Boxed and Sharp.

	Per dozen.
Clipper Grain	$9.00
English Clipper Grain	8.75

Grain or Clover Scythes.—Packed in Boxes.

Silver Steel Grain	$8.50
Silver Steel Grain, Waldron pattern, oil finish	8.25
Harvest Victor Grain	8.50
German or Cast Steel, half set, painted	8.25

Grass Scythes.—Boxed and Sharp.

The Big Chief, made from English cast steel	$8.00
Our Best, Grass or Dutchman pattern	7.75
Fine Cutlass Steel, Grass or Dutchman pattern	7.25
Clipper, Grass or Dutchman pattern	7.25
Silver Steel, Grass or Dutchman pattern	7.00
Honest Dutchman	6.70
Gilt Edge Grass	6.70
Diamond Edge, Grass or Dutchman pattern	6.50
Silver Steel Waldron	7.00

Grass Scythes.—Packed in Boxes.

Extra Steel Back	$6.50
Half set Waldron	6.50
Bush Scythe No. 44	7.50
Bush Scythe No. 22	7.25
IXL. Bush Scythe	7.00
Bush Scythe, red, green or blue	6.75
Weed Scythe, red, green or blue	6.75
New Orleans Bramble, full set	7.25

Rope.—Demand continues in fair volume, covering present requirements, the trade not stocking up at present values. Prices are apparently steady on the basis of 7-16 inch diameter and larger as follows. Pure Manila, 11½ cents per pound; other grades of Manila, 10¼ to 11 cents, according to quality; pure Sisal, 9 cents; mixed Sisal, 7½ cents.

Glass.—After a large amount of work and energy had been expended upon the formation of the proposed National Association of Window Glass Manufacturers it was found, at a meeting held in Cleveland, Ohio, on the 9th inst., that manufacturers could not agree upon a selling agency plan. Owing to this fact it is reported that there is no prospect of perfecting the proposed organization. In regard to wages for the coming fire, the opinion is quite general that the workers will ask an increase, while the manufacturers will ask a reduction, at the conference of the wage committee. It is not unlikely that some time may be required to harmonize their ideas. In the meantime some manufacturers may make private wage agreements with workmen so as to start their factories. Small sizes of Glass are especially scarce, owing to the depressed condition of the Belgium Glass industry and the low prices ruling in this country. Jobbers, both East and West, have generally advanced prices on the first three brackets to 90 and 5 per cent. discount, while the price for larger sizes of 90 and 15 per cent. remains unchanged. Local demand is light.

Oils.—*Linseed Oil.*—Demand is light for spot deliveries, being confined to small lots. Crushers are not accepting orders for more than two weeks in advance, it being admitted that Oil costs more at the present price of Seed than it is selling for. But for the position taken by the manufacturers it is expected that some business could be done in contract orders for future delivery. Quotations are as follows: City Raw, in lots of five barrels or more, 45 cents per gallon; in lots of less than five barrels, 46 cents per gallon; State and Western Raw, 43 to 44 cents per gallon, according to quantity. For Boiled Oil there is the usual 2 cents advance per gallon over Raw.

Spirits Turpentine.—Prices have reached a lower point than for a long time, with buying confined to moderate quantities. Quotations in this city, according to quantity, are as follows: Oil barrels, 54¾ to 55¼ cents; machine made barrels, 55¼ to 55¾ cents per gallon.

NATIONAL HARDWARE ASSOCIATION.

WE are advised that an unusual number of members of the National Hardware Association have signified their intention of being present at the tenth annual convention, November 16, 17 and 18, at Atlantic City. It is predicted that a larger representation of the members of the association will be in attendance than on any previous occasion.

During the last five or six years a few members have resigned for various causes, although each year the enrollment of the association has been kept up to the standard by other accessions. Since the last convention, however, almost all of those have returned. The following houses have affiliated with the association since the last meeting, in November, 1903:

Bronson & Townsend Company, New Haven, Conn.
Norvell-Shapleigh Hardware Company, St. Louis, Mo.
Fletcher Hardware Company, Detroit, Mich.
Marshall-Wells Hardware Company, Duluth, Minn.
Treman, King & Co., Ithaca, N. Y.
Kruse Hardware Company, Cincinnati, Ohio.
Benedict, Warren & Davidson, Memphis, Tenn.
Wm. Henry & R. E. Bell Hardware Company, Ft. Worth, Texas.
Bering & Cortes Hardware Company, Houston, Texas.
Ed. A. Hughes & Co., Abilene, Texas.
Nash Hardware Company, Ft. Worth, Texas.
Peden Iron & Steel Company, Houston, Texas.

It is regarded as not unlikely that before the next meeting two or three other very prominent concerns will be enrolled as members.

REQUESTS FOR CATALOGUES, &c.

The trade are given an opportunity in this column to request from manufacturers price-lists, catalogues, quotations, &c., relating to general lines of goods.

REQUESTS *for catalogues, price-lists, quotations, &c., have been received from the following houses:*

FROM STORCK BROTHERS, Battle Creek, Iowa, who have purchased the stock of Wm. Warmock, dealer in Hardware, Stoves, &c., and desire catalogues and price-lists of Hardware, Harness, Implements, Vehicles, Wire, Paints and Oils, Furnaces and Stoves, Plumbing Goods, Brass Goods and Gas Fixtures.

FROM ADOLPH CERNY, Pawhuska, Okla., who desires copies of catalogues and price-lists relative to General Hardware and Gas Fittings. Mr. Cerny is putting up a new store at Pawhuska, which he expects to occupy about October 1.

FROM O. F. MILLARD, Indianola, I. T., who has lately removed from Wagoner.

FROM E. J. RICE, Lyndon, Kan., who has recently bought the Shelf and Heavy Hardware and Harness stock of Swisher & Fleming.

FROM CALLENDER HARDWARE COMPANY, Angola, Ind., which has bought the Hardware business formerly conducted by Snyder & Co. The same parties also conduct a store at Hicksville, Ohio, under the style of Callender Bros.

FROM LOCKARD & OVENDORFF, Yates Center, Kan., who have succeeded W. P. Lockard in the Hardware and furniture business.

FROM PAISTE-HARPER HARDWARE COMPANY, INCORPORATED, Chester, Pa., which has succeeded D. P. Paiste in the wholesale and retail business in Shelf Hardware, Stoves, Paints and Oils, Sporting Goods, &c. The new company will add a complete line of Mill and Engineers'

Supplies, Ship Chandlery, Mechanical Rubber Goods and Packings.

FROM J. M. MCGHEE, Dawes, I. T., who has recently entered the General Hardware and Agricultural Implement business at that point, the stock having been removed from Miami, I. T., where a store had formerly been conducted under the style of McGhee Bros., J. M. McGhee acquiring the interest of his brother.

PORT ARTHUR IN A SHOW WINDOW.

THE H. C. SHAW COMPANY, Stockton, Cal., dealer in Implements, Vehicles and General Hardware, presented as a window display for advertising purposes a panorama of Port Arthur, of which the accompanying illustration is a reproduction. The water was represented by Sheet Tin, the forts by Machine Bolts, cannon by Martin Two-Wheel Casters, and the shore by Oakum. Buggy Dusters, covered with White Cotton Waste, simulated mountains, and the lighthouse consisted of a Water Bucket and Pan with Wire Vegetable Basket and Bicycle

Bird's-eye Window Display of Port Arthur.

Lamp resting on a foundation of Machine Bolts. The fleet was made up by shaping Cross Cut and Buck Saw Blades in proper form, using Mouse Traps for turrets and Brass Hose Nozzles as cannon and masts. The funnels were really Pipe Nipples, and some cannon were typified by Check Valves and Pipe Nipples. The locomotive was evolved through the medium of Iron Pipe Fittings, cars being produced by manipulating Hollow and Round Planes, with trucks of Sash Rollers. The air ship for military observation consisted of two 5-gallon Milk Cans pointed with a Tin Funnel, supplemented with a three-arm Lawn Sprinkler and a Milk Skimmer as a propeller. The basket was a Bake Pan. The field telegraph consisted of Hammer Handles for poles, Clothes Pins for cross arms and strung with Wire to make it realistic. The display was an effective one and attracted much attention from the public.

THE WISCONSIN HARDWARE COMPANY has been organized, with a capital stock of $200,000, at Green Bay, Wis., with Mitchell Joannes and Frank E. Murphy of Green Bay and A. E. Winter of Oshkosh as incorporators. The company will purchase the wholesale business and establishment of Gotfredson Brothers Hardware Company of Green Bay. Morley Brothers, Saginaw, Mich., are the largest stockholders.

TRADE ITEMS.

THE WILKINSON SHEAR AND CUTLERY COMPANY, Reading, Pa., contemplate further additions to its plant. The present works, which occupy a building 50 x 150 feet, five stories high, which was built less than a year ago, it finds too small for its increasing business. One of the principal products of this company is the Wilkinson Sheep Shears, its manufacture of which, it says, covers about 75 per cent. of all the Sheep Shears used in the United States. The company's success with these Shears, as well as with its other lines of Cutlery, it attributes to the careful scientific and methodical practice of manufacture. The steel is bought subject to rigid specifications and analysis and the methods of working and tempering is done to conform with the composition, to insure uniformity in the finished product.

THE R. D. CONE COMPANY of Winona, Minn., has closed out its Heavy Hardware stock, and will discontinue that line of business, devoting itself exclusively to the sale of Shelf Hardware, Tinware, Tinners' Stock, Paint, Glass, Wire and Nails, Fencing, Sporting Goods, Cutlery, Ammunition, Fishing Tackle, and other lines shown in its general catalogue. This is probably the oldest Hardware firm in Minnesota, having been established by Royal D. Cone in 1855.

TROUT HARDWARE COMPANY, Chicago, have taken over most of the factory lines of Wallis, Robinson & Co., who have discontinued business.

ON a petition by the widow of the late Senator A. B. Burns, the Sandage Steel Skein Company of South Bend, Ind., has been placed in the hands of a receiver, G. S. Summers being appointed by the court.

GRAY & DUDLEY HARDWARE COMPANY, Nashville, Tenn., which has been working on a new catalogue for the past 18 months, expects to issue it about December 1. It has lately awarded the contract for the printing of this catalogue, together with a number of departmental catalogues, to the Marshall & Bruce Company of Nashville, who secured the contract notwithstanding lively home competition and close bids from printing establishments in Chicago and other large cities. The main catalogue will contain 1500 pages, and an edition of 3000 will be printed. The smaller catalogues will contain 24 to 324 pages each.

C. J. BENHAM has for the past two or three years been president and treasurer, and for 13 years in charge of the selling department of the Hamden Mfg. Company, successor to W. A. Ives & Co., Hamden, Conn. He and his family have recently acquired the entire capital stock of the company. Extensive improvements in the factory are under way and a material increase in the working force will be made. The company states that orders for Augers and Bits are coming in very satisfactorily, and expects that this year's business will exceed last year's by at least 25 per cent.

Magill Hardware Company, Chattanooga, Tenn., issues a circular to its "friends from whom we buy and to whom we sell," in which it states that it has just closed a successful year, the twenty-fifth since Mr. Magill founded the business. It is also announced that Horace G. McGhee will continue to manage the retail and Builders' Hardware department, that Charles H. Magill will have charge of the wholesale department and that C. L. Ford will look after office affairs, all of these gentlemen by years of faithful service in the house being thoroughly fitted for the duties assigned to them.

T. K. Elliott is successor to the business formerly conducted by the Maloney-Bezner Hardware Company in Essex, Iowa. A new building has been completed, to accommodate the stock of Agricultural Implements, Stoves and Heavy Hardware.

The L. H. Kurtz Hardware, Plumbing & Heating Company, Des Moines, Iowa, has been incorporated and will do a wholesale and retail business in Shelf and Heavy Hardware, Plumbing, Heating, Stoves and Tinware.

SPECIAL BRANDS.

IT has long been a grievance of the manufacturers of various lines of Hardware that the pressure from their customers, especially the jobbers, makes it necessary for them to make so many of their goods with special brands rather than their own. As a result of this tendency a great many articles are on the market bearing fictitious names and failing to indicate whose manufacture they are. Some of the evils of this practice are referred to in the following communications, but the subject is a broad one, and in view of its importance we invite the fullest discussion:

Forcing Down Manufacturers' Prices.

From a Manufacturer in Ohio: We think the greatest trouble between the jobber and manufacturer is that the jobber is all the time getting new factories started in competition with the old makers, and when a new factory starts, in order to get the trade, they must make a lower price. This causes a glut on the market of manufactured goods, and has a tendency to and does pull down the manufacturer's legitimate profit, owing to this new competition, and, of course, the old manufacturer does not propose to allow his goods to stand in his factory and will find ways and means of disposing of them, and when some big catalogue house offers to take his entire stock at a cash price, and at the same price as the jobber pays, can you blame the manufacturer for so doing when the jobber has thrown him down by starting new competition? In that case the manufacturer gets spot cash, whereas the jobber takes 60 days, and sometimes takes three or four months and then tries to get a cash discount. It is a poor rule which will not work both ways.

Lowering of Quality in Special Brands.

From a Western Correspondent: We know of a leading jobber who for years bought a certain line of goods and asked the maker for and received a stipend for illustrating the line in his catalogue. They then got a new concern started to imitate as near as possible the same line of goods, but they were not full sizes or full weights, but they bought them for 5 per cent. less than the established and well advertised goods, which were and are still advertised in the leading Hardware papers throughout the country, whereas the line they now buy is not advertised at all, but they still have in their catalogue the old maker's cuts, trade-marks, &c., and fill their orders with the counterfeit goods. The manufacturer of the original goods, who is a friend of the writer's, received letters from the other leading jobbers asking how their competitor could sell the goods at the price he was asking and wanted to know whether this jobber was getting a better discount. In conclusion, would state that this same jobber is doing what other jobbers and retailers claim is being done by the catalogue houses—viz., advertising one line of goods and substituting imitations and inferior quality goods on their orders.

The Evil of Jobbers' Private Brands.

From a Leading Manufacturer: Several years ago the manufacturers of the line in which we are interested found it necessary, owing to the fact that the greater part of their goods were being sold below cost of manufacture, to get together for their mutual protection. One of the first difficulties we met was the fact that probably two-thirds of the goods sold were supplied under dealers' private brands and labels, and as these goods had no established classification or grade, it was difficult to fix prices for them. A committee was appointed, and each manufacturer sent in a list of the private brands of his customers, with his recommendation as to the grade in which each particular brand should be classed. It was found that the dealers had frequently changed their source of supply, and it was instructive, and rather amusing also, to note how the grades of certain brands had been reduced, the first maker of it reporting it in the highest grade, and so on down the line until it finally reached the lowest grade of all. A list of private brands, properly graded, was established, and although many dealers objected strenuously at first, claiming the brands were their private property and the manufacturers had no control over them, they eventually recognized that it was to their interest to have their brands classified and fixed, for it not only assured them uniformity of quality, but protected them against the reduction of grade on the part of their competitors, and kept them better advised as to what their competitors could afford to do on certain brands of goods. This list was maintained for several years, corrections being made where it could be shown that a dealer had been unfairly treated in the original classification, although but very few instances of this kind were found, and additions made to it from time to time as new brands were established. This list is still maintained as a basis of quotation by the manufacturers, although, unfortunately, they are no longer working in harmony. The manufacturers in this line still make a special charge for the labels, or require the customer to supply them.

Classification of Special Brands

A Register of Private Brands

Varying Quality of Same Brands

The greatest difficulty in meeting this question is the fact that in many instances manufacturers are not working in harmony, they use the private brand and label as one means of cutting price, and the evil has become so firmly established that it is almost impossible to break away from it without united action. The dealers ought not only to furnish all of the labels for private brands, but there should be a reasonable net extra charge, which would justify the manufacturer in sacrificing the reputation of his own factory brands. The dealer can, and should, obtain a higher price for his own private brand goods, for he can control the price of them, and the reputation which is established for them, not through any effort of the dealer, but from the quality of the goods themselves is a valuable asset, and the dealer should willingly pay for the privilege of having his goods put up in that way. It is a well known fact that in some lines of goods the manufacturers, with but some few exceptions, have become practically unknown to the retailers or consumers.

Manufacturers Should Charge More for Private Brands

Special Brands in Carpenters' Tools.

From a Prominent Manufacturer: On the subject of special brands, we firmly believe that you cannot take up a nobler work than to encourage the merchants to purchase the manufacturers' brands, rather than those that are made under the various and sundry special names of jobbers. Hardware jobbing houses in every city of the country have adopted their own brands in a good many lines of tools, and particularly Carpenters' Tools, and with these they go out to the trade and fight the manufacturers' brands. This has resulted in a rather bad condition for the merchant in a great many places, where he has been induced, first by one jobber and then by another, to put in these various brands, for one reason or another, principally on account of price; and without going more into detail on the question, this work on the part of the jobbers has brought about a pretty bad situation, which is forcing the manufacturers to go direct to the retail dealers with their own factory brands, and do an immense amount of missionary work and advertising among the consumers.

Manufacturers Driven to Retailers and Consumers

Manufacturers in some lines of goods are simply obliged to take steps of this kind, or else sit back and see the trade which they have already established on their brands gradually fade away. A manufacturer cannot afford to take a back seat on this matter; if he does, it will not be many years before his business will be worth nothing more than the intrinsic value of his plant. He would certainly have no good will or reputation to dispose of, in case he should ever want to sell; whereas, on the other hand, any manufacturer to-day, in any line of goods, whose brands are well established on the market (or who is working aggressive-

Manufacturers MUST Sell Their Own Brands

ly to establish them) is bound to have a business that is worth more than the price of old machinery or real estate.

To go back again to the merchant, we believe that he is certainly better off in the long run (both in the matter of giving satisfaction to his customers and building up a valuable trade) to stick to manufacturers' brands, with less danger of the goods going out of date, or, in many other ways, of causing him a loss, than there is when he is handling any of the special jobbers' brands, with wonderful names to them, which mean nothing but an empty sound.

Retailers Should Avoid Special Brands

BROWN & SHARPE'S EXHIBIT AT THE WORLD'S FAIR.

THE accompanying illustration shows the interesting exhibit of the Brown & Sharpe Mfg. Company, Providence, R. I., at the St. Louis Exposition. The company shows no Machine Tools, excepting as a part of exhibits of various electrical concerns, its exhibit being chiefly confined to Small Tools and Cutters, of which very complete lines are included, as the illustration indicates. In addition there are shown several devices for exact measuring, such as are employed at the company's works for obtaining accuracy in the finished product. The measuring machine used in the Standard Gauge department has attracted a good deal of attention.

Brown & Sharpe's Exhibit at the World's Fair.

DEATH OF CHARLES E. CONNER.

CHARLES E. CONNER, connected with the general management of the Waterbury (Conn.) Brass Company's factory of the American Brass Company, was accidentally run over and killed by a train at Saybrook Junction, Conn., recently. Mr. Conner was born November 15, 1876, and, although comparatively young, was much appreciated by the higher officials of the company, who were about to make him general superintendent of the sheet, rod and wire mills of the Waterbury plant at the time of his sudden death. Mr. Conner was educated in the public schools, graduating from the Waterbury High School, and afterward taking a course in the Waterbury Business College. He is alluded to as a young man of fine character, painstaking, industrious, and possessed of a high sense of honor, qualities which endeared him to his employers and many friends, by whom he will be sincerely missed. He was a member of Nosahogan Lodge of Odd Fellows and secretary of the Abagadasset Club.

AT a meeting of the Warren Independent Steel Company, Warren, Ill., held September 9, it was decided to change the name of the company to the Warren Steel Company.

TRENTON HARDWARE MFG. COMPANY.

TRENTON HARDWARE MFG. COMPANY, Trenton, N. J., has been organized with a capital of $50,000, $10,000 paid in, for the purpose of making a full line of Builders' Hardware. The company expects to adopt the Rim line of the old Trenton Lock & Hardware Company, but, aside from this, its intention is to make an up to date line of Hardware, which, it is hoped, will meet the public fancy. The president of the company is Walter Emmons, recently manager of the Billingham Foundry Company, who will have special charge of the foundry department. C. B. Everdell, vice-president, was formerly superintendent of the Skillman Hardware Company and will look after the finished product. C. E. Borden, for a number of years connected with the Empire Rubber Mfg. Company, is treasurer.

M'INTOSH HARDWARE CORPORATION'S NEW CATALOGUE.

THE McINTOSH HARDWARE CORPORATION, Cleveland, has just issued an illustrated descriptive catalogue of 1330 pages, each 11 x 8½ inches, bound in stiff covers. In it are shown, copiously illustrated, large assortments of Sporting Goods and Cutlery, Manufacturers' Supplies, Gas Pipe and Fittings, and Electrical Supplies, in addition to general Hardware. Some idea of the scope of the various lines is indicated by the 126 columns of index matter. In the front of the book is a telegraph code, and in addition to the general alphabetical index are numerical indexes of Locks and Latches and others Builders' Hardware, Carving Knives and Forks, Pocket Cutlery, &c., to facilitate finding of articles wanted in so large a book. The catalogue is one of the most complete yet published, and gives an excellent idea of the very extensive series of lines carried by the McIntosh Company.

F. A. BLACK MFG. COMPANY.

THE F. A. BLACK MFG. COMPANY has been organized at Scottdale, Pa., and has purchased the business of the La Belle Cutlery Company, which F. A. Black has been operating in Allegheny, Pa., for the past six years. The company will erect a new plant at Scottdale, the main building of which will be 75 x 100 feet in size. The lower floor of the main building will be used for making material and the upper floor for finishing. A second building, two stories high and 45 x 114 feet, will contain the forge shops, where the blades will be made. The new company will manufacture fine Cutlery and expects to have its plant in operation before January 1. The officers of the company are F. A. Black, president; Arthur B. Loucks, vice-president; Ralph Loucks, secretary-treasurer, and M. S. Loucks, J. P. Owens, A. J. Geyer and T. W. Porter, directors.

PROVIDING AGAINST THE LOSS OF CATALOGUES.

WIRE GOODS COMPANY, Worcester, Mass., have found a preventive against losing catalogues and like matter sent to large concerns having many departments. It has been a common experience of Hardware manufacturers that their publications get lost in the rush in the places of business of some of their large customers, so that discount sheets and other important matter never come to the hand of the buyers or other persons for whom they are intended. To avoid this the Wire Goods Company in the lower left hand corner of

FOR

MR. _____

HOUSE FURNISHING DEPARTMENT,	
UPHOLSTERY "	
HARDWARE "	
OFFICE.	

the cover upon which the general address is written provide a place for the name of the party for whom the printed matter is particularly intended, together with the department with which he is connected. Good results have been obtained by this simple expedient.

CIRCULAR LETTERS.

MILO J. THOMAS, Corunna, Ind., in adding a new line of goods to his stock addresses a circular letter to his trade about as follows, Agricultural Implements being the subject in this instance:

Dear Sir: In addition to our already mammoth stock of Hardware, &c., we have entered the field as full-fledged Implement Dealers. If you need anything in this line we shall be pleased to have you confer with us on your requirements.

We have just received a car of Red Cedar Fence Posts, suitable for 4 or 5 foot fence, and Red Cedar End Posts 10 feet long. American Fence from 20 to 33 cents per rod is, we think, a fence equal to all requirements at a cost just a little more than the cost of the Wire. Now is the time to build fence.

We shall try to sell you all the goods you need in our line at a price that will be entirely satisfactory to you. We are here to stay, and have no other motive but to treat our customers with fairness.

Thanking you for your trade in the past, and hoping, by fair treatment, to retain the same, &c.

Mr. Thomas likes to hold old and valued customers, but occasionally, for one reason or another, a fancied offense or imaginary grievance, one of them becomes conspicuous by his failure to visit his store for a considerable time. In a case of this sort the merchant writes the missing one a letter to the following effect:

Dear Sir: We have not seen you in and around our store for some time. We may have done something that has offended you. We have always appreciated your valuable trade, and if we have done anything that has not met with your approval, or that should cause you to stay away or go elsewhere to do your trading, we are willing to talk the matter over with you.

We have no other motive in view than to treat our customers with fairness. We want you to make our place of business your headquarters, whether you need anything or not We have many accommodations to offer our visitors and customers, and want you to profit in them.

With best wishes for your prosperity, &c.

This letter generally succeeds in bringing back the old customer. He may not want any goods the first time he renews acquaintance, but drops in to assure the proprietor that "there was nothing wrong. Don't need anything just now, but will come in later."

Mailing List.

Mr. Thomas has a mailing list of 500 names, which is carefully watched and kept up to date. When a farmer moves away the fact is promptly noted and his successor receives a cordial invitation to visit the store and make it his headquarters.

AMONG THE HARDWARE TRADE.

Culbertson & Boland, dealers in Hardware, Agricultural Implements, Stoves, Paints, &c., Auburn, Ind., have become a corporation, under the style of Culbertson Hardware Company. Mr. Boland has retired from the business and will spend the winter in Oklahoma. Hugh R. Culbertson established the store in 1881.

Nelson Hardware Company, Fremont, Neb., has been incorporated, to carry on the retail business in Shelf Hardware, Stoves, Sporting Goods, &c.

F. E. Wilson has succeeded Fairman & Wilson in the Hardware business at Boulder, Col.

The Rauscher Hardware Company, Jackson, Tenn., is successor to the business until recently managed by Gooch & Edenton. An assorted line of Shelf and Heavy Hardware, Stoves and Tinware, Farming Implements, &c., at wholesale and retail will be carried.

Under the name of the Nashua Hardware Company, Nashua, Iowa, W. E. Newcomb has opened a General Hardware and Harness store in the Butterfield Building.

E. W. Lowell, president of the Lowell Hardware Company, Janesville, Wis., has transferred his stock in the company to William A. Leonard of Chicago. The company carries on a wholesale and retail business in General Hardware, Stoves and Furnaces, the wholesale business having increased noticeably of late.

The Hope Hardware Company, Hope, Ark., has incorporated to do a General Hardware business, carrying as well Sash and Doors and Agricultural Implements. A large warehouse has been built and a story is being added to the company's present store.

The firm of James & Hawkins has recently been formed for the purpose of carrying on a General Hardware and Paint business at Jamaica and Rockville Center, N. Y.

U. S. Conn, proprietor of the Fargo Hardware Company, Fargo, N. D., has sold out to B. J. Howland, who will continue the wholesale and retail business in Shelf and Heavy Hardware, Paints, &c.

Tobin Brothers, De Queen, Ark., have purchased the stock of Hardware, Furniture and Farming Implements of R. M. Cone. They will add a line of Wagons and Buggies.

J. H. Williams, Glencoe, Okla, has purchased the stock of Shelf and Heavy Hardware, Furniture, &c., formerly carried by W. A. Gorton.

L. N. Simon, Goff, Kan., has purchased the General Hardware and Furniture business formerly owned by Charles B. Kennison.

FACTORY COST AND BUSINESS METHODS.

PARRY MFG. COMPANY'S PRIZES TO EMPLOYEES.

PARRY MFG. COMPANY, Indianapolis, Ind., which is one of the largest and best administered manufacturing plants in the country, has in successful operation a system to encourage its employees to make suggestions in regard to improvements in any department of the establishment. The general features of the system are explained in the following letter from the company, in which it will be seen that its successful operation is alluded to in the strongest terms:

We have given prizes as rewards for suggestions from workmen for several years, and in our opinion the investment has amply repaid us. We have endeavored to offer amounts sufficiently large to create the most interest and produce the best results. Our prizes are distributed semiannually and are divided into three classes—viz., those open to foremen, those for factory operatives and a special class for office employees. The first and second classes receive a total of $75 each, divided into prizes of $35, $20, $10, $5 and $5. The office contest is for prizes amounting to $50, in amounts of $20, $15, $10 and $5. Each contestant simply places his suggestion in boxes prepared for the purpose, affixing his signature to same. At the end of six months the boxes are opened and the superintendents and Board of Directors award the prizes. If there has ever been dissatisfaction or charges of favoritism they have failed to come to our knowledge.

Three Classes of Prizes

The system is unqualifiedly a success. We have in mind a single idea, evolved from a workman's suggestion, which revolutionized a certain process in our manufacturing department and has benefited us more than all the prizes we have ever given. A surprising number of the suggestions are truly valuable, and cover a range of ideas so wide that no set of managers, however competent, could hope to grasp them all in the ordinary, strenuous run of business. Our office system (and we flatter ourselves that ours is as good as fallible human beings can make it) has been largely evolved from the ideas of employees. Some of the suggestions have recited our shortcomings in somewhat forcible language, but we have "laid up naught in malice" against the writers, and some of the letters have come so near the mark that immediate redress on our part was necessary. It has done us good to have the mirror held up to us—"to see oursilves as ithers see us."

Value of the Suggestions Received

The whole scheme is worth while. It promotes a friendly feeling between employer and employee, it tones down the harsher qualities of the employer and it stimulates the workman to greater effort; it is, in fact, a strong plank in the bridge which must be builded over the chasm which, some insist, separates labor and capital—and we shall continue it.

A Complete Success

SAFEGUARDS AGAINST ACCIDENTS IN FACTORY.

THE PAGE BELTING COMPANY, Concord, N. H., in practice has found the methods referred to below advantageous both to itself and its workmen, being convinced that a business concern should take every possible precaution to protect its employees from injury or death. This company carries accident insurance on its employees and in past years has had a good many accidents, but while this procedure exempts it from financial loss, it does not replace fingers, hands or other members of the body, nor heal wounds. As a means of minimizing and preventing accidents as far as possible the company has had placed on every machine in its plant notices like the one here reproduced, which in the original is on white cardboard, 8 x 3⅛ inches:

SPECIAL NOTICE.

All persons are forbidden operating this machine until the working of it, and the danger attending the careless use of it, have been fully explained.

It must not be run when not in perfect working order, and the operator is forbidden to make any repairs or readjustment without instructions from the foreman of this department.

YOU ARE ESPECIALLY WARNED TO REFRAIN FROM TALKING WHILE OPERATING THIS MACHINE.

PAGE BELTING COMPANY.

Not relying, however, entirely on such a concise and comprehensive warning, as a further safeguard they also use a paper slip, to be signed by the workmen:

Concord, N. H.,.....

.....has this day taught me how to operate the.....

I fully understand the working of said machine and the liability to injury in the operation of the same.

.....

The company refers to this method as having worked admirably, the number of accidents in its plant having been reduced very materially since it was adopted.

DEATH OF SEYMOUR SMITH.

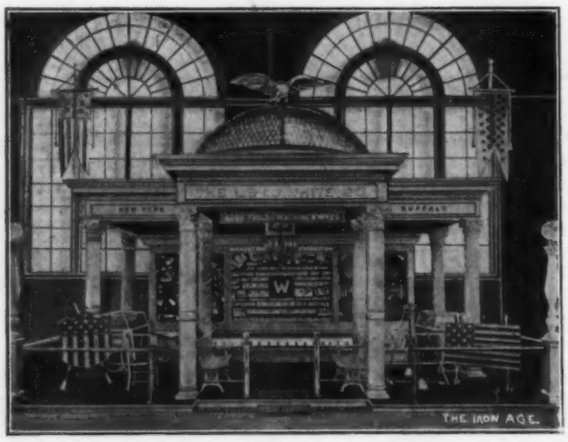
SEYMOUR SMITH of Seymour Smith & Son, Oakville, Conn., died last week at his home from the infirmities of old age, Mr. Smith having been in the ninetieth year of his age. He was born at South Springfield, Vt., March 29, 1815, but most of his early life was spent at Uxbridge, Mass., where at the age of 20 he was employed in the Capron Woolen mills. In 1840 he accepted the position of superintendent of the cotton mills at Rogersonville, Mass. About ten years later Mr. Smith removed to Worcester and there started manufacturing Light Hardware articles with Daniel Boxton. A few years later he moved the business to Sharon, Conn., and in 1867 he located in Oakville, where he continued his manufacturing enterprise. Some years afterward his son was taken into partnership under the style familiar to the trade. During the last ten years of his life Mr. Smith was confined to his home with paralysis of the limbs and was able to go about the house only in a wheel chair. Though thus confined, Mr. Smith enjoyed good health until a few weeks ago, and for many years had the satisfaction of seeing the business he had established successfully conducted by his son and grandson.

AMERICAN AXE & TOOL COMPANY'S SCYTHE CATALOGUE.

THE AMERICAN AXE & TOOL COMPANY, Glassport, Pa., have just issued a fine example of trade catalogue, covering their lines of Scythes, Hay Knives, Bush Hooks, Hedge Trimmers, Corn Knives and Grass Hooks. It is printed in colors, showing graphically in *fac-simile* the actual appearance of the various lines, in grade finishes, some of the labels and other features, which serve to make the book noteworthy, together with an ornate embossed cover in colors.

L. & I. J. WHITE COMPANY'S ST. LOUIS EXHIBIT.

The L. & I. J. White Company, Buffalo, N. Y., has a fine exhibition of its various products at the Louisiana Purchase Exposition, located in the southeast corner of the Machinery Building. This business was established in 1857 and incorporated in 1892. At the company's plant are manufactured complete lines of edge tools and machine knives, among which are coopers', carpenters' and shipwrights's tools, plane irons, full lines of chisels, butchers' and ice tools. In the way of machine knives they make planing, molding, paper veneer, shingle and leather splitting knives, shear blades and cutting dies of every description. They also have a display of coopers' tools in connection with the exhibit of the Chickasaw Cooperage Company, Memphis,



St. Louis Exhibit of L. & I. J. White Company.

Tenn., showing the different stages in the manufacture of cooperage. This is located in Space 34, Forestry Building.

PRICE-LISTS, CIRCULARS, &c.

Manufacturers in Hardware and related lines are requested to send us duplicate copies of catalogues, price-lists, &c., one copy for our Catalogue Department in New York and another for our London office; and at the same time to call our attention to any new goods or additions to their lines, of which appropriate mention will be made, besides the brief reference to the catalogue or price-list in this column.

THE STANDARD PAINT COMPANY, 100 William street, New York: An attractively printed 48-page monograph, entitled "A Ruberoid Album," which treats exhaustively of their Ruberoid Roofing. It is copiously illustrated, showing mills, factories, warehouses, depots, churches, residences, &c., which have been covered with this Roofing and giving many testimonials from users.

FLETCHER, TERRY & Co., Forestville, Conn.: Illustrated price-list of interchangeable and standard styles of Glass Cutters, Circle Cutters, &c. The firm states that its Cutters are made on newly designed and specially constructed machinery for this class of work, and calls special attention to the superior finish on holders.

MODEL HEATING COMPANY, 716 Arch street, Philadelphia, Pa.: Pamphlet, for free distribution, containing information for heating engineers. The present one gives directions how to locate radiators for direct radiation.

SYCAMORE WAGON WORKS, Sycamore, Ill., successors to Shipman, Bradt & Co., De Kalb, Ill.: Catalogue of Milk, Grocery, Laundry, Bakery, Meat, Hardware, Furniture, Piano and Organ and other Wagons, built on their special low down short turn system of construction.

AMERICAN STEEL & WIRE COMPANY, New York: List prices of Bright, Annealed, Tin Plated, Hair Steel and Copper Wire on spools.

THE DAYTON MALLEABLE IRON COMPANY, Dayton, Ohio: A 24-page pamphlet calling attention to Whiffletree Couplings, Rim Bands, the Dayton Fifth Wheel, Goose Necks, Canopy Sockets, Buggy, Phaeton and Surrey Steps, Seat Handles, &c.

W. B. JARVIS COMPANY, Grand Rapids, Mich.: Illustrated catalogue A of Sportsmen's Supplies, including Guns, Rifles, Revolvers, Ammunition, Hunting Clothing, Gun Sundries, Skates, &c.

THE ROOT BROS. COMPANY, Plymouth, Ohio: Catalogue No. 11, illustrating Repairing Outfits, Harness Menders, Shoe Lasts and Stands, Shoe Hammers, Boot Jacks, Corn Shellers, &c.

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BRITISH LETTER.

Offices of *The Iron Age*, HASTINGS HOUSE, NORFOLK ST., LONDON, W. C., September 3, 1904.

The Week's Hardware Trade.

ALTHOUGH the market is stronger than for some time past, yet there is a lot of leeway to make up to secure the average for September. Orders are fairly plentiful, but the prices leave very little margin. The most noticeable improvement is chiefly in regard to brass and domestic ware—Curb, Fenders, Hearth Sets, Ranges, Coal Vases, Bedsteads, Chandeliers and Hollow Ware. At this time of the year there is naturally a good deal of activity in the gas fitting and electric lighting branches. Makers of Gas Stoves and Oil Stoves complain of slackness; and this ought to be the best time of the year for them. Edge Tool makers are doing fairly well, especially in Hoes, Axes, Picks, Forks, both on home and foreign account. Japanners and tin plate workers find things slow; but those who are quick to bring out novelties are not doing badly. There is always room for originality in such goods as are generally associated with these trades. Unfortunately, there is a disposition to fall back on old patterns when trade is sagging. Tube manufacturers are busy both in brass, copper and wrought iron material. Seamless Steel Tubes are selling well in anticipation of next year's Cycle requirements. The most profitable Tubes are those bought by engineers for high class work; otherwise the trade is not very remunerative. Best Locks are in good demand; secondary qualities report no improvement.

On foreign account, South African indents have slightly improved; but more substantial trade is being secured from Australia, Egypt and the near East. I mentioned trade with West Africa last week; there is evidently a rising trade in this quarter of the globe. Orders from South America continue good both in value and volume.

The Motor Car Industry.

American export firms doing a trade in either Motor Cars or their accessories will be interested to know approximately the number of Cars in use in this country. As every Car has to be registered, it is easy to find out. Up to April 1, the totals were: In England, 28,073; Scotland, 1903; Ireland, 1445—making a total of 31,421. As the wear and tear is obviously excessive, there is plenty of room for the sale of components and accessories of every description. The question is how to get at the owners. This ought not to be difficult, for the drivers must also be registered. Up to the same date, the number of drivers taking out licenses reached 40,660. Some proportion of these are *chauffeurs*, but the majority of them are the owners of their own machines. An enterprising trader ought to get a copy of these lists, which are made out in their several counties.

Taking the industry as a whole, the figures are very striking. The Cycle and Motor industries in this country have a paid up capital of over £30,000,000. Nearly 500,000 Cycles were made in the Midlands last year.

The South Australian Harvest.

Those having trade connections with South Australia will be gratified to learn that the agricultural season just ended was one of the most productive on record. The crops of every kind of produce show a marked advance on last year. This is notably the case with wheat, oats, hay, wine, butter and cheese. Vineyards and orchards have multiplied largely, the number of vines in bearing being 10,380,926. The losses in cattle and sheep caused by the drought have been almost, if not quite, obliterated, and the dairying and pastoral industries are in a really healthy condition. Owing to the fine seasonable rains that have fallen, and judging by the present state of the crops, the next harvest is expected to be as good as the last.

Circular Saws and High Speed Steel.

The *Ironmonger* makes the interesting announcement that several Sheffield firms are experimenting with high speed steel for making Circular Saws. It is as yet too early to reach any definite conclusion on the point, but there are obvious advantages accruing if the thing can be done with commercial success. It would be a waste of valuable material to apply high speed steel to lumber cutting purposes, but for cutting cold iron, steel and other metals an immense trade could be done if the right combination could be worked out. There is an immense amount of metal sawing in the brass and copper trades, and when we remember that not only are the cutting power and temper of the steel unaffected by heat, however great, but also that it will outlast several of the old variety, it follows that a commercial asset of potential value may be created.

Catalogues for India.

A tax on catalogues is a particularly objectionable form of protection, and I am glad to learn that the Government of India has decided to admit, free of import duty, all trade catalogues and circulars imported into British India by packet, book, or parcel post. Hitherto this trade literature has been subjected to a duty of 5 per cent. *ad valorem*, under No. 50 of the tariff. The concession is probably a result of the recent protests by the British Chambers of Commerce against similar duties in the colonies, more particularly in Australia, where the duty on catalogues, &c., is 25 per cent., and where the exemption of duty on single copies of catalogues forwarded by post has lately been withdrawn.

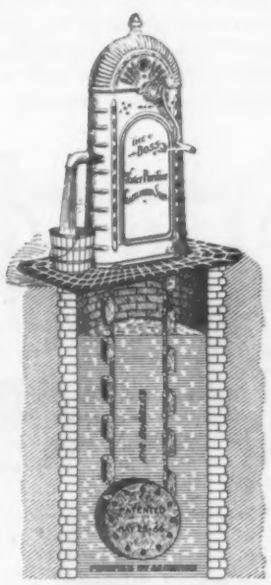
MISCELLANEOUS NOTE.

Steel Hammers.

The Grey Iron Casting Company, Mount Joy, Pa., are putting on the market a new line of five sizes of steel hammers. These goods are recommended by them as well finished and durable.

The Boss Corrugated Steel Elevator Pump.

The pump shown herewith has a galvanized steel corrugated curb. The pump can be put up, the manufacturers remark, in 15 minutes, as it has no attachment below the platform. The chain is made of best galvanized steel, connected with solid heavy galvanized 17-gauge flat links. Among the advantages claimed for the pump



The Boss Corrugated Steel Elevator Pump.

are the following: That it is warranted to 30 feet in depth; with special gearing and bottom wheel to 60 feet; that it draws 10 gallons of water per minute; that it will not freeze, having stood a test of 38 degrees below zero, and that it is guaranteed to purify any foul well or cistern in ten days' ordinary use. The pump is offered by the Cincinnati Pump Company, Clay and Liberty streets, Cincinnati, Ohio.

Yankee Automatic Drill No. 44.

North Bros. Mfg. Company, Philadelphia, Pa., has just put on the market an automatic drill with adjustable tension. To insure a spring the strength of which would be satisfactory for both soft and hard woods and for large and small drills, a device is used to adjust the tension of the spring. The cap on the top of the drill,

Fig. 1.—Yankee Automatic Drill No. 44.

Fig. 1, has a screw attached to it, by revolving which the spring is made longer or shorter, thereby making the spring weaker or stronger. The spring is held at the desired tension by a small bolt or lock which engages in the cap, and is operated by a small knob on the side of the handle. To open the magazine in the handle containing the drill points, Fig. 2, the drill is held with the chuck end up, and the nut above the handle is unscrewed. This brings all the drill points in sight, enabling the user to

Fig. 2.—Drill Point Magazine.

select and remove the drill point required. Eight drill points are furnished with each tool, one each 1-16, 5-64, 3-32, 7-64, ⅛, 9-64, 5-32 and 11-64 inch. The entire tool, including the drill point, as in Fig. 1, is 11¼ inches long. The tool is nickel plated, each packed in a strong paper box.

Improved Pedometer.

The New York Sporting Goods Company, 61 Nassau street, New York, is marketing an improved style of pedometer, as here illustrated. The novelty of this mechanism for measuring distances traversed by pedestrians is the method of at any time setting the hands automatically at the starting point by slightly pressing the knob or plunger in stem, this improvement, it is said, being an innovation in pedometers sold at a moderate price. The pedometer is carried properly on the person

Fig. 1.—Front of Pedometer.

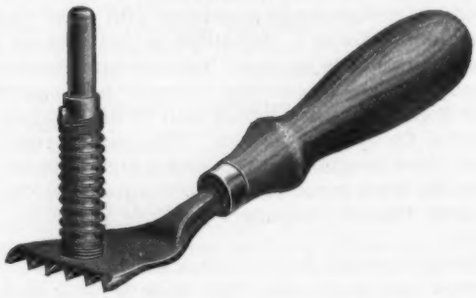
Fig. 2.—Back of Pedometer with Cap Removed.

Improved Pedometer.

by a hook attached to the ring, it being necessary to have a pedometer suspended to work correctly. The large hand makes a complete revolution every 10 miles, divided on dial with quarter miles, the smaller hand recording up to 100 miles by tens of miles, when it repeats. The pedometer is adjusted to the stride of the carrying individual by springing off the back cap, which exposes the interior, as shown in Fig. 2, and lengthening or shortening a screw provided for that purpose, which is fully explained in printed directions packed with each instrument. The pedometer is 1⅝ inches in diameter, nickel plated, and put up singly in a double pasteboard box.

Magic Carpet Stretcher and Tack Driver.

The National Mfg. Company, Worcester, Mass., and 103 Chambers street, New York, has put on the market the Magic carpet stretcher and tack driver, here illustrated. It is 7 inches long, with wood handle, natural finish, coiled wire spring to automatically raise the plunger, and the toothed portion is painted a dark green.



Magic Carpet Stretcher and Tack Driver.

In use a tack is inserted in the tube, ¼ inch in diameter, from beneath, the plunger itself being magnetized to keep it in position, when, after pushing the carpet to its proper place, a blow of the hammer drives the tack home without risk of injury to fingers. The company advises us that while this article has been thoroughly tested through the medium of house to house sales by canvassers, it is now for the first time offered to the trade as a staple article.

Wire Center Cotton Bell Cord.

The Tucker & Carter Rope Company, New London, N. C., and 76 South street, New York, has recently put on the market a patented braided cord, as here illustrated. This cord has a galvanized wire center, around which is woven water proofed cotton to further protect the wire core. The feature of this material is that it will not stretch, being designed to supersede leather and

Cotton Bell Cord with Wire Center.

other bell cords for railroad use, especially for surface and subway lines. The Interborough Company, operating the elevated and subway roads in New York City, we are informed, has ordered 300,000 feet for use on its subway trains.

THE INTER-STATE BLOW PIPE WORKS, Mobile, Ala., has been organized to manufacture a blow pipe and dust collector for planing mills. The company is meeting with good success in introducing this device, the dust trap, the special feature of which is the safeguard against fire, attracting favorable attention. This company is a side issue of McMillan Bros. Company, who for years has manufactured turpentine stills and done general coppersmithing.

Awlrite Window Fastener.

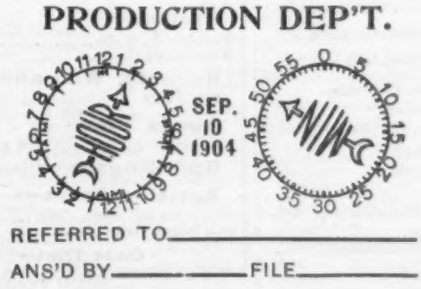
O. L. Little Pulley Coating Company, Menasha, Wis., has recently begun the manufacture of the Awlrite window fastener, here illustrated nearly half size. The fastener is designed to sustain a window sash at any determined point by spring pressure, without using cord, chain, ribbon or weights. It is applied by mortising one side of sash in rectangular shape, 2 x ¾ inches, ¼ inch

Awlrite Window Fastener and Section of Sash.

deep, except at ends, where a depth of ½ inch is required. There is also a circular bore 13-16 inch diameter to receive a stout spiral steel spring, which, pressing against the cast iron shoe, sustains the sash automatically, the latter being readily raised or lowered by temporary finger pressure on the nickeled lever, which is 2⅝ inches over all, and held in place by a round head 1⅛-inch screw. The cut away portion of sash and lever shows clearly the internal mechanism.

Improved Hoggson Pocket Time Stamp.

The Hoggson Time Stamp Company, 106-108 Fulton street, New York, has greatly improved the various details of the Hoggson pocket time stamp, which was illustrated in these columns in June, 1900. The improvements have been along lines suggested by wide use both here and abroad. It is 4½ inches high and weighs only 10 ounces. In appearance it resembles a fair sized watch with 1⅝-inch dial and 1⅛ inches through from front to back to hold the necessary mechanism. At the top is a



Impression Made by Hoggson Pocket Time Stamp.

handle to press when stamping documents and below is a metallic base, 2½ x 1¾ inches. Beneath this base is a rubber die, around which a firm's name and address or any matter within reasonable limits can be executed to order at no additional cost. The movement is stem wound at the right side of case, pressure on the top recording the year, month, day, hour and minute of stamping. The two arrows showing hour and minute are slightly recessed so as to revolve properly without hindrance, a pressure of the knob at top causing the arrows to descend slightly by means of an air cushion protected by rubber sides. The outer casings are gun metal, finished with cocobola top or handle. There can be any wording within the limits of 1⅝ x 2½ inches, and stamp can be used with any color of rubber stamp ink pad desired. We are advised by the company that the stamp is in use by the United States and a number of foreign governments, railroads, telegraph, telephone and steamship companies, bankers, merchants, manufacturers and others.

The Eagle Washing Machine.

The Voss Brothers Mfg. Company, Davenport, Iowa, has placed on the market the washing machine shown in

Fig. 1.—Eagle Washing Machine.

the accompanying cuts. In construction the main gear is attached to the main vertical shaft, and measures squarely with a segmental gear with a slotted arm. In operation the action of the lever imparts to the spur pinion a rapid motion, giving to the dasher a high rate of speed. Claim is made that the use of the slotted segmental gear makes resistance to the push of the lever, or operating crank, uniform at all angles. The slotted segmental gear is operated on a standard stand in connection with roller bearings. The tub is made of Louisiana cypress throughout, having corrugated sides and bottom, the legs forming part of the body, and is bound with three heavy

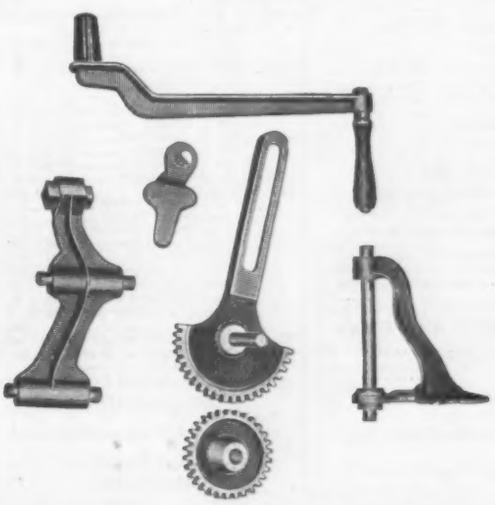


Fig. 2.—The Six Working Parts of Eagle Washer.

hoops. The tub is finished in a deep red, the hoops are aluminum bronzed, and the gearing is finished in blue.

F. E. Myers & Bro., Ashland, Ohio, have lately added to their office force J. C. Frentz, formerly of the American Seeding Machine Company of Springfield, Ohio. Mr. Frentz has had many years' experience in office work and was lately employed in the collection department of the American Seeding Machine Company.

Current Hardware Prices.

REVISED SEPTEMBER 13, 1904

General Goods.—In the following quotations General Goods—that is, those which are made by more than one manufacturer, are printed in *Italics*, and the prices named, unless otherwise stated, represent those current in the market as obtainable by the fair retail Hardware trade, whether from manufacturers or jobbers. Very small orders and broken packages often command higher prices, while lower prices are frequently given to larger buyers.

Special Goods.—Quotations printed in the ordinary type (Roman) relate to goods of particular manufacturers, who are responsible for their correctness. They usually represent the prices to the small trade, lower prices being obtainable by the fair retail trade, from manufacturers or jobbers.

Range of Prices.—A range of prices is indicated by means of the symbol @. Thus 33⅓@33⅓ & 10% signifies that the price of the goods in question ranges from 33⅓ per cent. discount to 33⅓ and 10 per cent. discount.

Names of Manufacturers.—For the names and addresses of manufacturers see the advertising columns and also THE IRON AGE DIRECTORY, issued May, 1904, which gives a classified list of the products of our advertisers and thus serves as a DIRECTORY of the Iron, Hardware and Machinery trades.

Standard Lists.—A new edition of "Standard Hardware Lists" has been issued and contains the list prices of many leading goods.

Additions and Corrections.—The trade are requested to suggest any improvements with a view to rendering these quotations as correct and as useful as possible to Retail Hardware Merchants.

Adjusters, Blind—

Domestic, ₩ doz. $3.00..... 33⅓%
North's..... 10%
Zimmerman's—See *Fasteners, Blind.*

Window Stop—

Ives' Patent..... 35%
Tapliu's Perfection..... 35%

Ammunition—See *Caps, Cartridges, Shells, &c.*

Anvils—American—

Eagle Anvils..... ₩ ℔ 7¼@7¾c
Hay-Budden, Wrought..... 8@9¼c
Horseshoe brand, Wrought..... 8@9¼c
Trenton..... ₩ ℔ 9@9¼c

Imported—

Peter Wright & Sons..... ₩ ℔ 10½c

Anvil, Vise and Drill—

Millers Falls Co., $18.00..... 15&10%

Apple Parers—See *Parers, Apple, &c.*

Aprons, Blacksmiths'—

Hull Bros. Co..... 30%
Livingston Nail Co..... 33⅓%

Augers and Bits—

Com. Double Spur..... 75@75&5%
Boring Machine Augers....66⅔@70%
Car Bits, 12-in. twist.....60@60&10%
Jennings' Pattern ... 50&10&5@60%
Ford's Auger and Car Bits.....40&5%
Forstner Pat. Auger Bits.....25%
C. E. Jennings & Co.:
No. 10 ext. lip. R. Jennings' list.....25%
No. 30. R. Jennings' List.....40&7½%
Russell Jennings'.....25&10&2½%
L'Hommedieu Car Bits.....15%
Mayhew's Countersink Bits.....45%
Millers' Falls.....50&10&7½%
Ohio Tool Co.'s Bailey Auger and Car Bits.....40&10%
Pugh's Black.....20%
Pugh's Jennings' Pattern.....35%
Snell's Auger Bits.....60%
Snell's Bell Hangers' Bits.....60%
Snell's Car Bits, 12-in. twist.....60&10%
Wright's Jennings Bits (R. Jennings' list).....50%

Bit Stock Drills—

See *Drills, Twist.*

Expansive Bits—

Clark's small, $18; large, $26.....50&10%
Clark's Pattern, No. 1, ₩ doz., $26; No. 2, $18.....50&10%
Ford's, Clark's Pattern.....50&10&6%
C. E. Jennings & Co., Steer's Pat.....25%
Swan's.....60%

Gimlet Bits—

Common Double Cut..gro. $3.00@3.25
German Pattern.....gro. $4.50@4.75

Hollow Augers—

Bonney Pattern, per doz. $10.00@11.00
Ames.....25&10%
New Patent.....25&10%
Universal.....20%
Wood's Universal.....25%

Ship Augers and Bits—

Ford's.....40%
C. E. Jennings & Co.:
L'Hommedieu's.....15%
Watrous'.....35&5%
Ohio Tool Co.'s.....40%
Snell's.....40%

Awl Hafts, See *Hafts, Awl.*

Awls—

Brad Awls:
Handled.....gro. $2.75@3.00
Unhandled, Shouldered..gro. 63@66c
Unhandled, Patent.....gro. 66@70c
Peg Awls:
Unhandled, Patent....gro. $1@1.5c
Unhandled, Shouldered..gro. 65@70c
Scratch Awls:
Handled, Common..gro. $3.50@4.00
Handled, Socket..gro. $11.50@12.00
Hurwood.....40%

Awl and Tool Sets—See *Sets, Awl and Tool.*

Axes—

Single Bit, base weights (up to 3½ lb.)
First Quality.....$6.50
Second Quality.....$5.75
NOTE.—Heavier Weights add Extras as per regular schedule.

Axle Grease—See *Grease, Axle*

Axles—

Iron or Steel
Concord, Loose Collar..... 4@4¼c
Concord, Solid Collar..... 4¼@4c
No. 1 Common.....3½@3¾c
No. 1½ Com. New Style.....3¾@4¼c
No. 2 Solid Collar.....4¼@5c
Nos. 7, 8, 11 and 12.....75@75&5%
Nos. 13 to 14.....70&10@75&5%
Nos. 15 to 18.....60&10@60&10&10%
Nos. 19 to 22.....70&10@75%

Boxes, Axle—

Common and Concord, not turned.. lb. 4¼@4½c
Common and Concord, turned..... lb. 5@5¼c
Half Patent.....lb. 9@9½c

Bait—Fishing—

Heudryx:
A Bait.....30%
B Bait.....25%
Competitor Bait.....30&5%

Balances—Sash—

Caldwell new list.....50%
Pullman.....50&10@60%

Spring—

Spring Balances..... 60@60&5%
Chatillon's:
Light Spg. Balances.....40&10%
Straight Balances.....40%
Circular Balances.....50%
Large Dial.....30%

Barb Wire—See *Wire, Barb.*

Bars—Crow—

Steel Crowbars, 10 to 40 lb., per lb.. 3@3½c

Towel—

No. 10 Ideal, Nickel Plate....₩ gro, $8.50

Beams, Scale—

Scale Beams, List Jan. 12, '02.40@10%
Chattillon's No. 1.....30%
Chattillon's No. 2.....40%

Beaters—Carpet—

Holt-Lyon Co.:
No. 12 Wire Coppered ₩ doz $0.85; Tinned.....$1.00
No. 11 Wire Coppered ₩ doz. $1.10; Tinned.....$1.20
No. 10 Wire Galvanized....₩ doz. $1.75
Western W. G. Co.
No. 1 Electric.....₩ gro. $7.80
No. 2 Buffalo.....₩ gro. $9.00
No. 3 Perfection Dust.....₩ gro. $8.00

Egg—

Holt-Lyon Co.:
Holt, No. A, Japanned.....₩ doz. $1.20
Holt, No 1, Tinned.....₩ doz. $1.50
Holt, No. B, Japanned.....₩ doz. $2.00
Holt, No. 2, Tinned.....₩ doz. $2.25
Lyon. No 2, Japanned.....₩ doz. $1.25
Lyon. No. 3, Japanned.....₩ doz. $1.50
Taplin Mfg. Co.: ₩ gro.
No. 60 Improved Dover.....$6.00
No. 75 Improved Dover.....$6.50
No. 100 Improved Dover.....$7.00
No. 102 Improved Dover, Tin'd...$8.50
No. 150 Improved Dover, Hotel..$15.00
No. 152 Imp'd Dover, Hotel, T'd..$17.00
No. 200 Imp'd Dover Tumbler.....$8.50
No. 202, Imp'd Dover Tumbler, Tin'd. $9.50
No. 800, Imp'd Dover Mammoth, ₩ doz.....$35.00
Western, W. G. Co., Buffalo.....$7.00
Wonder (S. S. & Co.)....₩ gro. net, $6.00

Bellows—

Blacksmith, Standard List..75@75&5%

Blacksmiths'—

Inch..	*30*	*32*	*34*	*36*	*38*	*40*
Each	*$3.50*	*3.75*	*4.25*	*4.80*	*5.35*	*6.15*

Extra Length:
Each $4.00 4.55 5.10 5.60 6.40 7.50

Molders—

Inch.....	10	12	14
Doz.....	$8.50	10.00	13.00

Hand—

Inch.....	*6*	*7*	*8*	*9*	*10*
Doz.....	*$4.25*	*4.50*	*5.00*	*6.50*	*7.75*

Net Prices.

Bells—Cow—

Ordinary goods.....75&5@75&10%
High grade.....70&10@70&10&5%
Jersey.....75&10%
Texas Star.....50%

Door—

Abbe's Gong.....45%
Barton Gong.....50%
Home, R. & E. Mfg. Co.'s.....55&10%
Lever and Pull, Sargent's....60&10&10%
Trip Gong.....50&10@50&10&5%
Yankee Gong.....35%

Hand—

Hand Bells, Polished, Brass..... 60&5@60&10&5%
White Metal.....60%
Nickel Plated..... 30&10@50&10&5%
Swiss.....60@60&7½%
Cone's Globe Hand Bells.....33⅓@35%
Silver Chime.....33⅓@35%

Miscellaneous—

Farm Bells..... lb. 2¼
Steel Alloy Church and School.. ... 50&10&5@60&5%
American Tube & Stamp'g Co. Gongs..75%
Table Call Bells.....50@50&10%

Belting—Rubber—

Agricultural (Low Grade)..75@75&5%
Common Standard.....70@70&10%
Standard.....65@70%
Extra.....60&5@60&10%
High Grade..... ...50&5@50&10%

Leather—

Extra Heavy, Short Lap....60@60&5%
Regular Short Lap 60&10@60&10&10%
Standard.....70@70&5%
Light Standard.....70&10%
Cut Leather Lacing.....60&10%
Leather Lacing Sides, per sq. ft..18c

Bench Stops—See *Stops, Bench*

Benders and Upsetters, Tire—

Detroit Perfected Tire Bender.....40%
Green River Tire Benders and Upsetters.....20%
Detroit Stoddard's Lightning Tire Upsetters, No. 1, $4.25; No. 2, $7.25; No. 3, $10.50; No. 4, $16.25; No. 5, $20.50.

Bicycle Goods—

John S. Leng's Son's 1902 list:
Chain.....50%
Parts.....50%
Spokes.....50%
Tubes.....60%

Bits—

Auger, Gimlet, Bit Stock Drills, &c.—See *Augers and Bits.*

Blocks—Tackle—

Common Wooden.....70&10@75&5%
Hollow Steel Blocks, with Ford's Patent Sheaves.....50&10%
Lane's Patent Automatic Lock and Junior.....30%
Stowell's Novelty, Mal. Iron.....50&10%
Stowell's Self Loading.....60%
See also *Machines, Hoisting.*

Boards, Stove—

Zinc, Crystal, &c.....30&10@40&10%

Boards, Wash—

See *Washboards.*

Bolts—Carriage, Machine, &c.—

Common Carriage.....75@....%
Phila. Eagle, $3.00 list May 24, '99.... 80&10%
Bolt Ends, list Feb. 14, '95.....75@....%
Machine.....75&5@75&10%
Machine with C. & T. Nuts ..... 70&5@....%

Door and Shutter—

Cast Iron Barrel, Round Brass Knob:

Inch.....	*3*	*4*	*5*	*6*	*8*
Per doz...	*$0.26*	*.30*	*.39*	*.47*	*.65*

Cast Iron Spring Foot:

Inch	*6*	*8*	*10*
Per doz.....	*$1.00*	*1.25*	*1.75*

Cast Iron Chain, Flat, Japanned:

Inch.....	*6*	*8*	*10*
Per doz	*$0.75*	*1.05*	*1.30*

Cast Iron Shutter, Brass Knobs:

Inch.....	*6*	*8*	*10*
Per doz.....	*$0.57*	*.80*	*1.00*

Wrt Barrel, Jap'd..75&10@75&10&10%
Wrt "Bronzed..50&10@50&10&10%
Spring .....70&10@70&10&10%
Wrt. Shutter...50&10@50&10&10&5%
Wrt. Square Neck..70&10@70&10&10%
Wrt. Square..66⅔&10@66⅔&10&10%
Ives' Patent Door.....60%

Stove and Plow—

Plow ..... 65&10@....%
Stove .....30&5@30&10&5%

Tire—

Common 72½%
Norway Iron.....80%
American Screw Company:
Norway Phila., list Oct. 16, '84.....80%
Eagle Phila, list Oct. 16, '84.....82½%
Bay State, list Dec. 28, '99.....72½%
Franklin Moore Co.:
Norway Phila., list Oct. 16, '84....80%
Eagle Phila., list Oct. 16, '84.....82½%
Eclipse, list Dec. 28, '99.....72½%
Russell, Burdsall & Ward Bolt & Nut Co.
Empire, list Dec. 28, '99.....72½%
Norway Phila., list Oct. '84.....80%
Union Nut Co.:
Tire Bolts.....72½%

Borers, Tap—

Borers Tap, Ring, with Handle:

Inch.....	*1¼*	*1½*	*1¾*	*2*
Per doz...	*$4.30*	*5.00*	*5.75*	*7.25*
Inch	*2¼*		*2½*	
Per Doz.....	*$8.65*		*11.50*	

Enterprise Mfg. Co., No. 1, $1.25; No. 2, $1.65; No. 3, $2.50 each.....25%

Boxes, Mitre—

C. E. Jennings & Co.....30%
Langdon.....15&10%
Perfection.....₩ doz. $30.00
Schatz.....40%

Braces—

Common Ball, American...$1.15@1.25
Barber's.....50&10&10@60&10%
Fray's Genuine Sporford's.....60%
Fray's No. 70 to 120, 81 to 123, 207 to 414.....60%
C. E. Jennings & Co.....50&5%
Mayhew's Ratchet.....60%
Mayhew's Quick Action Hay Patent..50%
Millers Falls Drill Braces.....25&10%
P., S. & W. Co. Peck's Patent 60&10@65%

Brackets—

Wrought Steel.....80&10@....%
Bradley's Wire Shelf:
Full cases.....80&10&10%
Broken cases.....80&10%
Griffin's Pressed Steel.....80%
Griffin's Folding Brackets.....70&10%
Stowell's Cast Shelf.....75%
Stowell's Sink.....50%
Western, W. G. Co., Wire.....60&10%

Bright Wire Goods—See *Wire and Wire Goods.*

Broilers—

Western, W. G. Co.....80%
Wire Goods Co.....75@75&10%

Buckets, Well and Fire—See *Pails*

Bucks Saw—

Hoosier.....₩ gro. $36.00

Bull Rings—See *Rings, Bull.*

Butts—Brass—

Wrought list Sept., '96.....20@30%
Cast Brass, Tiebout's.....50%

Cast Iron—

Fast Joint, Broad.....50@50&10%
Fast Joint, Narrow.....50@50&10%
Loose Joint.....70&5@70&10%
Loose Pin.....70&5@70&10%
Mayer's Hinges.....70&5@70&10%
Parliament Butts.....70&5@70&10%

Wrought Steel—

Table and Back Flaps.....75%
Narrow and Broad.....75%
Inside Blind.....75&10%
Loose Pin.....75%
Loose Pin, Ball and Steeple Tip 80&20%
Japanned, Ball Tip Butts.70&10%
Bronzed Wrt. Nar. and Inside Blind Butts.....55&10%

Extra 10@10&10%

Cages, Bird—

Hendryx, Brass:
3000, 5000, 1100 series.....5%
1200 series.....33⅓%
200, 300, 600 and 900 series.....40&10%
Hendryx Bronze:
700, 800 series.....40&10%
Hendryx Enameled.....40&10%

Calipers—See *Compasses.*

Calks, Toe and Heel—

Blunt, 1 prong.....per lb. 4@4½c
Sharp, 1 prong.....per lb. 4½@4¾c
Gautier, Blunt.....4@4½c
Gautier, Sharp.....4½@4¾c
Perkins', Blunt Toe.....₩ ℔ 3.65
Perkins', Sharp Toe.....₩ ℔ 4.15

Can Openers—See *Openers, Can*

Cans, Milk—

	5	8	10 gal.	
Illinois Pattern.	$1 35	1.85	2.05	each.
New York Patt'rn	1.50	2.20	2.45	each.
Baltimore Patt'rn	1.50	2.20	2.45	each.
Dubuque	1.35	1.60	1.75	each.

Cans, Oil—

Buffalo Family Oil Cans:		
3	5	10 gal.
$48.00	60.00	120.00 gro., net

Caps—Percussion—

Eley's E. B. 60c
G. D .....*per M 3½@35c*
F. I. .....*per M 40 @45c*
G. E. .....*per M 50@65c*
Musket .....*per M 62@63c*

Primers—

Berdan Primers, $2.00 per M. ..20&5%
B. L Caps (Sturtevant Shells) $2.00 per M 20%
All other primers per M. $1.50@$1.60

Cartridges—

Blank Cartridges:
32 C. F., $5.50 .....10&5%
38 C. F., $7.00 .....10&5%
22 cal. Rim, $1.50 .....10&5%
32 cal. Rim, $2.75 .....10&5%
B. B. Caps, Con., Ball Shogd $1.90
B. B. Caps, Round Ball $1.40
Central Fire 25%
Target and Sporting Rifle .....15&5%
Primed Shells and Bullets .....15&10%
Rim Fire Sporting 50%
Rim Fire, Military .....15&5%

Casters—

Bed .....70@70&10%
Plate .....60&5@60&10%
Philadelphia .....75@75&5%
Acme, Ball Bearing .....33⅓&5
Boss .....70&10%
Boss Anti-Friction .....70&10%
Gem (Roller Bearing) 30%
Martin's Patent (Phœnix) 45%
Standard Ball Bearing 45%
Tucker's Patent low list 80%
Yale (Double wheel) low list 50%

Cattle Leaders—

See *Leaders, Cattle.*

Chain, Coil—

American Coil, Straight Link;

3-16	¼	5-16	⅜	7-16	½	9-16
7.40	5.10	4.15	3.45	3.30	3.20	3.15
⅝	¾	⅞	1 to 1¼ inch.			
3.10	3.00	2.95	2.95	per 100 lb.		

German Coil .....60&10c@10@70%

Halters and Ties—

Halter Chains .....60c@10@60c@10c@10%
German Pattern Halter Chains, list July 24, '97 .....60c@10c@10@....%
Cow Ties .....60@60c@10%

Trace, Wagon, &c.—

Traces, Western Standard: 100 pair
6½—6-3, Straight, with ring ...$23.50
6½—6-2, Straight, with ring ...$24.50
6½—8-2, Straight, with ring ...$28.00
6½—10-2, Straight, with ring ...32.00
Add 2¢ per pair for Hooks.
Twist Traces 2¢ per pair higher than Straight Link.
Trace, Wagon and Fancy Chains ..60c&5@60c@10c&5%

Miscellaneous—

Jack Chain, list July 10, '93:
Iron .....60c@10@60c@10c&5%
Brass .....60c@10@60c@10c@10%
Safety Chain .....75@75&10c&5%
Gal. Pump Chain .....*lb* 4¼@4¾c
Covert Mfg. Co.
Breast .....40&2%
Halter .....40&2%
Heel .....40&2%
Rein .....40&2%
Stallion .....40&2%
Covert Sad. Works:
Breast 70%
Halter 70%
old Back 70%
Rein 70%
Oneida Community:
Am. Coil and Halters .....40@40&5%
Am. Cow Ties .....45@50%
Eureka Coil and Halter .....45@50&5%
Niagara Coil and Halters .....45@50&5%
Niagara Cow Ties .....45&5@50&10&5%
Niagara Wire Dog Chains .....45@50&5%
Wire Goods Co.:
Dog Chain .....70&10%
Universal Dbl-Jointed Chain 50%

Chalk—(From Jobbers.)

Carpenters' Blue .....*gro. 35@38c*
Carpenters', Red .....*gro. 30@33c*
Carpenters', White .....*gro. 25@28c*
See also Crayons.

Checks, Door—

Bardsley's 45%
Columbia .....50&10%
Eclipse .....60&10%

Chests, Tool—

American Tool Chest Co.:
Boys' Chests, with Tools 55%
Youths' Chests, with Tools 40%
Gentlemens' Chests, with Tools 30%
Farmers', Carpenters', etc., Chests, with Tools 20%
Machinists' and Fitters' Chests, Empty 50%
Tool Cabinets 50%
C. E. Jennings & Co.'s Machinists' Tool Chests .....33⅓&10%

Chisels—

Socket Framing and Firmer

Standard List .....70c@10@75c@10%
Buck Bros 30%
Charles Buck 30%
C. E. Jennings & Co. Socket Firmer No. 10 .....60%
C. E. Jennings & Co. Socket Framing No. 15 .....60%
Ohio Tool Co.'s 70%
Swan's 70%
L. & I. J. White .....30@30&5%

Tanged—

Tanged Firmers .....50c&5@40c&10%
Buck Bros 30%
Charles Buck 30%
C. E. Jennings & Co. Nos. 191, 181 .....25%
L. & I. J. White, Tanged .....25&5%

Cold—

Cold Chisels, good quality, lb. 13@15c
Cold Chisels, fair quality .. lb. 11@12c
Cold Chisels, ordinary .....*lb. 9 @10c*

Chucks—

Beach Pat., each $8.00 .....35&5%
Pratt's Positive Drive 25%
Empire 25%
Blacksmiths' 25%
Skinner Patent Chucks:
Independent Lathe Chucks 50%
Universal 50%
Combination 50%
Drill Chucks, New Model 30%
Drill Chucks, Standard 40%
Drill Chucks, Skinner Patent, 0, 1, 2, 3, 4 .....40%
Drill Chucks, Skinner Patent, 3, 4, 5, 6, 7, 8 .....30%
Drill Chucks, Positive Drive 30%
Planer Chucks 25%
Face Plate Jaws 40%
Standard Tool Co.:
Improved Drill Chuck 45%
Union Mfg. Co.:
Combination 50%
Czar Drill 35%
Combination Geared Scroll 40%
Geared Scroll 40%
Independent 50%
Independent Steel 40%
Union Drill 45%
Universal 50%
Independent Iron Face Plate Jaws 40%
Independent Steel Face Plate Jaws 40%
Westcott Patent Chucks:
Lathe Chucks 50%
Little Giant Auxiliary Drill 50%
Little Giant Double Grip Drill 50%
Little Giant Drill, Improved 50%
Oneida Drill 50%
Scroll Combination Lathe 50%

Clamps—

Adjustable, Hammers' .....20@20&5%
Cabinet, Sargent's .....50&10%
Carriage Makers', P., S. & W. Co. 50%
Carriage Makers' Sargent's 60%
Besly, Parallel .....33⅓&10%
Linemans' Utica Drop Forge & Tool Co. 40%
Saw Clamps, see *Vises, Saw Filers'.*

Cleaners, Drain—

Iwan's Champion, Adjustable 55%
Iwan's Champion, Stationary 45%

Sidewalk—

Star Socket, All Steel ...₩ doz. $4.05 net
Star Shank, All Steel ...₩ doz. $3.24 net
W. & C. Shank, All steel, ₩ doz., 7¼ in., $3.00; 8 in., $3.25.

Cleavers, Butchers'—

Foster Bros 90%
New Haven Edge Tool Co.'s 45%
Fayette R. Plumb .....33⅓@33⅓&10%
L. & I. J. White 30%

Clippers—

Chicago Flexible Shaft Company:
'93 Chicago Horse .....$8.75 } 15%
1902 Chicago Horse .....10.75 }
20th Century Horse, each, $5.00 .....20%
Lightning Belt .....$15.00 } 15%
Chicago Belt .....20.00 }
Stewart's Patent Sheep $12.75 .....20%

Finger Nail Clippers—

Smith & Hemenway Co. .....doz. net $2.00

Clips, Axle—

Eagle 5-16 and ⅜ inch ....75@75&10%
Norway, 5-16 and ⅜ inch ...60c@10@70%

Cloth and Netting, Wire

—*See Wire, &c.*

Cocks, Brass—

Hardware list:
Compression, Plain Bibbs, Globe, Kerosene, Racking, &c., Cocks. .....70c@10@75%

Coffee Mills—See *Mills, Coffee.*

Collars, Dog—

Nickel Chain, Walter B. Stevens & Son's list 40%
Leather, Walter B. Stevens & Son's list 40%

Combs, Curry—

Metal Stamping Co 40%

Mane and Tail—

Covert's Saddlery Works .....60&10%

Compasses, Dividers, &c.

Ordinary Goods .....75c&5@75c&10%
Bemis & Call Hdw. & Tool Co.:
Dividers 65%
Calipers, Double 65%
Calipers, Inside or Outside 65%
Calipers, Wing 60%
Compasses 50%

Conductor Pipe, Galva —

L. C. L. to Dealers:

Territory.	*Nested.*	*Not nested.*
A. Eastern.	*75&7½%*	*75&2½%*
B. Eastern	*75&10&2½%*	*75&7½%*
Central	*75&7½%*	*75%*
Southern	*70&10%*	*70&5%*
S. Western	*70&7½%*	*70&2½%*

Terms, 60 days, 2% cash, 10 days. Factory shipments generally delivered.
See also *Eave Troughs.*

Coolers, Water—

Gal. each.	2	3	4	6	8	
Labrador	$1.20	$1.50	$1.80	$2.10	2.70	
Gal.	3	4	6	8		
Iceland, ea.	$1.80	$2.10	2.40	$3.00		
Gal.	2	3	4	6	8	
Galv. Lined Ea.	$1.85	$2.00	$2.2	$2.90	$3.90	25%
Ga.v. Lined side handles						
Gal.	2	4	6	2		
Each.	$1.95	$2.15	$2.40	$3.30	$4.15	25%

Coopers' Tools—

See *Tools, Coopers'.*

Cord—Sash—

Braided, Drab .....*lb. 35c*
Braided, White, Com .....*lb. 21@22c*
Cable Laid Italian .. lb. A, 18c; B, 16c
Common India .....*lb. 10@10½c*
Cotton Sash Cord, Twisted ....11@16c
Patent Russia .....*lb. ..@14c*
Cable Laid Russia .....*lb. ..@15c*
India Hemp, Braided .....*lb ..@18c*
India Hemp, Twisted .....*lb. 12@13c*
Patent India, Twisted .....*lb. 12@13c*
Anniston Cordage Co.: Braided Cotton.
Old Glory, Nos. 7 to 12 .....₩ lb 28 ¢
Anniston, Nos. 7 to 1 .....₩ lb 22 ¢
Old Colony, Nos. 7 to 12 .....₩ lb 22 ¢
Anniston Drab, Nos. 7 to 12 ...₩ lb 26 ¢
Pearl Braided, cotton, No. 6, ₩ lb, 22¢
Nos. 7 to 12, 21¢.
Eddystone Braided, Nos. 7, 8, 9 and 10 .. ¢ ₩ lb 24¢
Eddystone Braided Cotton, No. 6, ₩ lb 25¢
Harmony Cable Laid Italian, No. 7 to 10 .. ₩ lb 23¢
Peerless:
Cable Laid Italian .....16¢
Cable Laid Russian .....14¢
Cable Laid India .....12¢
Braided India .....18¢
Samson, Nos. 7 to 12:
Braided, Drab Cotton .....₩ lb 36½¢
Braided, Italian Hemp .....₩ lb 36¢
Braided, Linen .....₩ lb 53¢
Braided, White Cotton or Spot, ₩ lb 33¢
Massachusetts, White .....₩ lb 28 ¢
Massachusetts, Drab .....₩ lb 33 ¢
Phœnix, White, No's 7 to 12 .....24¢
No. 6 cords, 1¢ extra.
Silver Lake:
A quality, Drab .....40¢
A quality, White .....35¢
B quality, Drab .....35¢
B quality, White .....30¢
Italian Hemp .....40¢
Linen .....57½¢

Wire, Picture—

List Oct., '00. 85c&10c@10@85c&10c&10c&5%
Hendryx Standard Wire Picture Cord .. 85c&10&5%

Cradles—

Grain .....*40c@12½%*

Crayons—

White Round Crayons, gross. 5½@6c
Cases, 100 gro., $4.00, at factory.
D. M. Steward Mfg. Co.
Jumbo Crayons .....gr. $3.50 } Case lots 20%
Metal Workers' Crayons gr. $2.50 }
Soapstone Pencils, round, flat or square .....gr. $1.50 }
Rolling Mill Crayons .....gr. $2.50 }
Railroad Crayons (composition) gr. $2.00 }
Zelnicker's Lumber:
Red, Blue, Green .....₩ gro. $6.50
Black .....₩ gro. $4.00
See also *Chalk.*

Crooks, Shepherds'—

Fort Madison, Heavy .....₩ doz. $7.00
Fort Madison, Light .....₩ doz. $6.50

Crow Bars—See *Bars, Crow.*

Cultivators—

Victor Garden 50%

Cutlery, Table—

International Silver Company:
No. 12 Medium Knives, 1847 ..₩ doz. $3.50
Star, Eagle, Rogers & Hamilton and Anchor .....₩ doz $3.00
Wm. Rogers & Son .....₩ doz. $2.50

Cutters—Glass—

H. H. Mayhew Co 40%
Red Devil 50%
Smith & Hemenway Co 50%
Woodward 40%

Meat and Food—

American 30%

Nos.	1	2	3	4	8	5
Each	$5	$7	$10	$25	$50	$60

Enterprise .....25@25&7½%

Nos.	5	10	12	23	32
Each	$2	$3	$2.75	$4.50	$6

Dixon's, ₩ doz .....30&10@40%

Nos.	1	3	4
	$14.00	$17.00	$19.00	$30.00

Ideal .....40&10@50%
Little Giant, ₩ doz .....33⅓&40%

Nos.	305	310	312	320	322
	$35.00	$48.00	$44.00	$72.00	$68.00

N. E. Food Chopper 40%
New Triumph No. 605, ₩ doz. $24.00 .. 30&10@40%
Russwin Food No. 1, $24 00; No. 2, $27.00 .. 45&10&10%
Woodruff's, ₩ doz .....30&10@40%

Nos.	100	150
	$15.00	$18.00

Enterprise Beef Shavers .....25@30%

Slaw and Kraut—

Henry Disston & Sons:
Slaw, Corn Grater, &c 40%
Kraut Cutters 24 x 7, 26 x 8, 30 x 9 .....55%
Kraut Cutters 36 x 12, 40 x 12 .....40%
J. M. Mast Mfg. Co.:
Slaw Cutters, 1 Knife .....₩ doz. $3.00
Combined Slaw Cutter and Corn Grater .....₩ doz. $4.00
Tucker & Dorsey Mfg. Co.:
Kraut Cutters 40%
Slaw Cutters, 1 Knife, ₩ gr. ...$18@$20
Slaw Cutters, 2 Knife, ₩ gr. ...$32@$36

Tobacco—

All Iron, Cheap .....*doz. $1.25@$4.50*
Enterprise .....25&10%
National, ₩ doz. No. 1, $21; No. 2, $18 .. 40%
Sargent's, ₩ doz., No. 2 .....60%
Sargent's No 12 and 21 .....50&10%

Washer—

Appleton's, ₩ doz. $16.00 .....50&10&10%

Diggers, Post Hole, &c.—

Dalbey Post Hole Auger ...per doz., $9.00
Iwan's Improved Post Hole Auger .. 40&5%
Iwan's Vaughan Pattern Post Hole Augers, ₩ doz $6.25
Iwan's Perfection Post Hole Digger, ₩ doz. $8.25
Iwan's Split Handle Post Hole Diggers, ₩ doz $7.25
Kohler's Universal .....₩ doz., $15.00
Kohler's Little Giant .....₩ doz. $12.00
Kohler's Hercules .....₩ doz. $10.00
Kohler's Invincible .....₩ doz. $9.00
Kohler's Rival .....₩ doz. $8.00
Kohler's Pioneer .....₩ doz. $7.20
Never-Break Post Hole Diggers, ₩ doz. $24.00 .....60%
Samson, ₩ doz. $34.00 .....25%

Dividers—See *Compasses.*

Doors Screen—

Phillips', style E, ⅞ in .....₩ doz. $10.50
Phillips', style 077, ¾ in .....₩ doz. $8.00
Phillips', style x-y, ¾ in .....₩ doz. $11.00

Drawers, Money—

Tucker's Pat. Alarm Till No. 1, ₩ doz. $18; No. 2, $15; No. 3, $1 .. $1 8

Drawing Knives—

See *Knives, Drawing.*

Dressers, Emery Wheel—

Diamond Emery Wheel Dressers 35%
Diamond Wheel Dresser Cutters 35%

Drills and Drill Stocks—

Common Blacksmiths' Drill .. each $1.50@$1.75
Breast, Millers Falls .....15&10%
Breast, P., S. & W .....40&5%
Goodell Automatic Drills .. 40&5@40&10%
Johnson's Automatic Drills Nos. 2 and 3 .....16⅔%
Johnson's Drill Points 16⅔%
Millers Falls Automatic Drills ...33⅓&10%
Ratchet, Curtis & Curtis 25%
Ratchet, Parker's 40%
Ratchet, Weston's 33⅓%
Ratchet, Whitney's, P. S. & W 50%
Whitney's Hand Drill, No. 1, $10.00; Adjustable, No. 10, $12.00 .....33⅓%

Twist Drills—

Bit Stock .....*60c&10@60c&10c&10%*
Taper and Straight Shank .....*60c&10@60c&10c&5%*

Drivers, Screw—

Screw Driver Bits, per doz. ..45@60c
Balsey's Screw Holder and Driver, ₩ doz. 2½-inch, $6; 4-in., $7.50; 6-in., $9 .. 40%
Buck Bros' Screw Driver Bits 30%
Champion 50%
Edson 60%
Fray's Hol. H'dle Sets, No. 3, $12.00 50%
Gay's Double Action Ratchet 35%
Goodell's Auto 50&10&10@50&10&10&5%
Burwood 40%
Mayhew's Black Handle 40%
Mayhew's Monarch .....40&10%
Millers Falls, Nos. 20 and 21 .....25&10%
Millers Falls, Nos. 11, 12, 41 42 .....15&10%
Never Turn 60%
New England Specialty Co 50%
Sargent & Co.'s:
Nos. 1 and 60 .....50&10&10%
Nos. 50 and 55 .....60&10%
Nos. 20 and 40 .....70&10%
Smith & Hemenway Co .....40&5%
H. D. Smith & Co.'s, Perfect Handle ...40%
Stanley R. & L. Co.'s:
No. 94, Varnished Handles .....30@30&10&10%
No. 96 .....70@70&10&10%
Swan's:
Nos. 65 to 68 .....50%
No. 40 .....40&10%
Nos. 25, 35 and 45 .....30&10&10%

Eave Trough, Galvanized

Territory.	*L. C. L.*
A. Eastern	*80c&10%*
B. Eastern	*80c&10c&5%*
Central	*80c&10%*
Southern	*75c&10&5%*
S. Western	*75c&10c&5%*

Terms, 2% for cash. Factory shipments generally delivered.
See also *Conductor Pipe and Elbows.*

Elbows and Shoes—

Factory shipments *60%*
Perfect Elbows (S. S. & Co.) 40%

Emery, Turkish—

	4 to 5	5 to 150	Flour
Kegs ..... *lb.*	*5c*	*5½c*	*5½c*
½ Kegs ..... *lb.*	*5¾c*	*5¾c*	*5¾c*
Kegs ..... *lb*	*5c*	*6c*	
10-lb cans, 10 in case	*6¼c*	*7c*	*6c*
10-lb. cans, less than	*10c*	*10c*	*8c*

NOTE.—*In lots 1 to 3 tons a discount of 10% is given.*

Extractors, Lemon Juice

Fasteners, Blind—See *Squeezers, Lemon.*

Zimmerman's .....50&10%
Walling's 45%

Cord and Weight—

Ives 40%

Faucets—

Cork Lined .....*50@50c&10%*
Metallic Key, Leather Lined .....*70@70c&10%*
Red Cedar .....*40@40c&10%*
Petroleum .....*70c&10@75%*
B. & L. B. Co.:
Metal Key .....60&10%
Star 60%
West Lock .....50&10%
John Sommer's Peerless Tin Key 40%
John Sommer's Boss Tin Key 50%
John Sommer's Victor Metal Key .50&10%
John Sommer's Duplex Metal Key 60%
John Sommer's Diamond Lock 40%
John Sommer's I. X. L. Cork Lined ...50%
John Sommer's Reliable Cork Lined .. 50&10%
John Sommer's Chicago Cork Lined ..60%
John Sommer's O. K. Cork Lined 50%
John Sommer's No Brand, Cedar 50%
John Sommer's Perfection Cedar 40%
McKenna, Brass:
Burglar Proof, N. P 25%
Improved, ¼ and ⅜ inch 25%
Self Measuring:
Enterprise, ₩ doz. $36.00 .....40&10%
Lane's, ₩ doz. $36.00 .....40&10%
National Measuring, ₩ doz. $36 .40&10%

Felloe Plates—

See *Plates, Felloe.*

Files—Domestic—

List revised Nov. 1, 1899.

Best Brands	*70c@10@75c&5%*
Standard Brands	*75c@10@75c@10c@10%*
Lower Grade	*75c@10c@10@80c@10%*

Imported—

Stubs' Tapers, Stubs' list, July 24, '97 .....*50%*

Fixtures, Fire Door—

Richards Mfg. Co.:
Universal No. 103 .....$4.00
Special No. 104 .....4.00
Fusible Links 30.25
Expansion Bolts .....50&10%

Grindstone—

Net Prices:

Inch	*15*	*17*	*19*	*21*	*24*
Per doz.	*$2.15*	*2.85*	*3.25*	*3.75*	*4.80*

P., S. & W. Co .....30&10@40%
Reading Hardware Co 60%
Sargent's 70%
Stowell's Giant Grindstone Hanger ... ₩ doz. $6.00
Stowell's Grindstone Fixtures, Extra Heavy .....50&10&10%
Stowell's Grindstone Fixtures Light ... 60&10%

Fodder Squeezers—

See *Compressors.*

Forks—

Base Discounts Aug. 1, 1899, list:
Hay, 2 tine .50&10c&5%
Boys' & Fish, 2 tine .50&10c&5%
Hay & Boys', 3 tine 60c&5%
Hay & Boys', 4 tine 66⅔&5%
Champion Hay 66⅔&5%
Hay & Header, long 3 tine 65%
Header, 4 tine 65%
Barley, 4 & 5 tine, Steel 60&20%
Manure, 4 tine 60c&15c&1¼&5%
Manure, 5 and 6 tine 66⅔&c&2½&5%
Spading 70c&2½&5%
Potato Digger, 6 tine 60c&10%
Sugar Beet 40c&10%
Coke & Coal 40c&10%
Heavy Mill & Street 65%
Iowa Dig-Ezy Potato 60&10%
Victor, Hay 60&15&2½%
Victor, Manure 66⅔%
Victor, Header 65%
Champion, Hay 66⅔%
Champion Header 65%
Champion, Manure 60&15&2½%
Columbia, Hay 60&20%
Columbia, Manure 70%
Columbia, Spading 70&12½%
Hawkeye Wood Barley 40%
W. & C. Potato Digger 60&10%
Acme Hay 60&20%
Acme Manure, 4 tine 60&10&5%
Dakota Header 60&20%
Jackson Steel Barley 60&20%
Kansas Header 65%
W. & C. Favorite Wood Barley 40%
Plated.—*See Spoons.*

Frames— Saw—

White, Straight Bar, per doz. 75@80c
Red, Straight Bar, per doz $1.00@$1.25
Red, Double Brace, per doz. $1.40@1.50

Freezers Ice Cream—

Qt.	1	2	3	4	6
Each	$1 25	$1 60	$1.90	$2.20	$2.80

Fruit and Jelly Presses—

See Presses, Fruit and Jelly.

Fry Pans—See *Pans, Fry.*

Fuse— *Per 1000 Feet.*

Hemp $2.75
Cotton 3.80
Waterproof Single Taped 3.65
Waterproof Double Taped 4.40
Waterproof Triple Taped 5.15
Extra 10%

Gates Molasses and Oil—

Stebbins' Pattern 80c&10@80c&10c&5%

Gauges—

Marking, Mortise, &c. 50c&10c&5@50c&10c&10c&5%
Chapin-Stephens Co.:
Marking, Mortise, etc. 50&10@50&10&10%
Scholl's Patent 50&10@50&10&10%
Door Hangers 50@50&10%
Stanley R. & L. Co.'s Butt & Rabbet Gauge 90@20&10&10%
Wire, Brown & Sharpe's 25%
Wire, Morse's 25%
Wire P. S. & W. Co 30&10%

Gimlets— Single Cut—

Nail, Metal, Assorted, gro. $1.40@1.50
Spike, Metal, Assorted gro. $2.80@3 50
Nail, Wood Handled, Assorted, gro. $1.75@2.00
Spike, Wood Handled, Assorted gro. $4.25@4.50

Glass, American Window

See Trade Report.

Glasses, Level—

Chapin-Stephens Co 60@60&10&10%

Glue—Liquid Fish—

Bottles or Cans, with Brush 25@50%
Cans (½ pts., pts., qts., ½ gal., gal.) 25@48%
International Glue Co. (Martin's) 40&10%

Grease Axle—

Common Grade, gro. $4.50@5.50
Dixon's Everlasting, 10-℔ pails, ea. 85¢
Dixon's Everlasting, in bxs., ℔ doz. 1 ℔ $1.20; 2 ℔ $2.00

Grips, Nipple—

Perfect Nipple Grips 40&10&2%

Griddles, Soapstone—

Pike Mfg. Co 33⅓@33⅓&10%

Grindstones—

Bicycle Emery Grinder $6.50
Bicycle Grindstones, each $2.50@3.00
Pike Mfg. Co:
Improved Family Grindstones, per inch, per doz. $2.00 } 33⅓%
Pike Mower Knife and Tool Grinder, each $6.00 }
Velox Ball Bearing, mounted, Angle Iron Frames each, $3.25

Halters and Ties—

Covert Mfg. Co.:
Web 40&2½%
Jute Rope 40&5&5%
Sisal Rope 30%
Cotton Rope 45&2%
Hemp Rope 45&2%
Covert's Saddlery Works:
Web and Leather Halters 70%
Jute and Manila Rope Halters 70%
Sisal Rope Halters 60&20%
Jute, Manila and Cotton Rope Ties 70%
Sisal Rope Ties 60&10%

Hammers—

Handled Hammers—

Heller's Machinists' 40&10@40&10&10%
Heller's Farriers 40&10@40&10&10%
Magnetic Tack, Nos. 1, 2, 3, $1.25, $1.50, $1.75 40@40&10&10%
Peck, Stow & Wilcox 40&10&5%
Fayette R. Plumb:
Plumb, A. E. Nail 33⅓&7½@33⅓&10&7½%
Engineers' and B. S. Hand 50&7½&5@50&10&7½&5%
Machinists' Hammers 50&5@50&10&5%
Riveting and Tinners' 40&2½@40&10&2½%
Sargent's C. S. New List 40%

Heavy Hammers and Sledges—

Under 3 lb., per lb. 50c..80c&10c&10@85%
3 to 5 lb ....*per lb* 40c..80c&10c&10@85%
Over 5 lb....per lb. 30c..... 85@35c&10%
Wilkinson's Smiths' .....9½c@10c lb.

Handles—

Agricultural Tool Handles—

Axe, Pick, &c. ....5@50c&5%
Hoe, Rake, &c. ....45@50c&5%
Fork, Shovel, Spade, &c.:
Long Handles ....45@50&5%
D Handles 40%

Cross-Cut Saw Handles—

Atkins' 40&5%
Champion 45@45&10%
Disston's 50%

Mechanics' Tool Handle. 75

Auger, assorted ....*gro. $2.50@3 85*
Brad Awl ....*gro. $1.65@1 85*
Chisel Handles:
Apple Tanged Firmer, gro. ass'd. $2.40@2.85
Hickory Tanged Firmer, gro. ass'd. $1.15@$2.40
Apple Socket Firmer, gro. ass'd, $1.75@$1.95
Hickory Socket Firmer, gro. ass'd, $1.45 @ $1.60
Hickory Socket Framing, gro. ass'd. $1.60@$1.75
File, assorted ....*gro. $1.30@$1.40*
Hammer, Hatchet, Axe, &c. 80%
Hand Saw, Varnished, doz .80@85c
Not Varnished ....65@75c
Plane Handles:
Jack, doz. 80c; Jack Bolted 75c
Fore, doz. ....45c; *Fore, Bolted 90c*
Chapin-Stephens Co.:
Carving Tool ....40&40&10%
Chisel ....65&65&10%
File and Awl ....65&65&10%
Saw and Plane ....40&40&10%
Screw Driver ....40&40&10%
Millers Falls Adj. and Ratchet Auger Handles 15&10%
Nicholson Simplicity File Handle, ℔ gro. ....$0.85@$1.50

Hangers—

NOTE.—*Barn Door Hangers are generally quoted per pair, without track, and Parlor Door Hangers per double set with track, &c.*

Barn Door, New Pattern, Round Groove, Regular:

Inch	3	4	5	6	8
Single Doz.	$0.90	1.25	1.60	1.95	2.50

Barn Door, New England Pattern, Check Back, Regular:

Inch	3	4	5	6
Single Doz.	$1.30	1.85	2.50	3.00

Allith Mfg. Co.
Reliable No. 1 per doz. $8.00
Reliable No. 2 per. doz. $9.60
Chicago Spring Butt Co.:
Friction 25%
Oscillating 25%
Big Twin 25%
Chisholm & Moore Mfg. Co.:
Baggage Car Door 50%
Elevator 30%
Railroad 50%
Cronk & Carrier Mfg. Co.:
Loose Axle 60&10&5%
Roller Bearing 70&5%
Griffin Mfg. Co:
Solid Axle, No. 10, $12.00 70%
Roller Bearing, No. 11, $15.00 70%
Roller Bearing, Ex. Hy., No. 22, $18.00 70%
Hinged Hanger, $16.00 60&10%
Lane Bros. Co.:
Parlor, Ball Bearing $4.00
Parlor, Standard $3.15
Parlor, No. 105 $2.85
Parlor, New Model $2.80
Parlor New Champion $2.25
Barn Door, Standard 60&10&2½%
Hinged net $6.40
Covered 60&10%
Special 70&5%
Lawrence Bros.:
Advance 60&10%
Cleveland 70&5%
Clipper, No. 75 60%
Crown 60&10%
Easy Parlor Door, Dbl. Sets, $2.50; Single Sets, $1 25. 60&5%
Giant 70&5%
Hummer 60&10%
New York 60&10%
Peerless 70&5%
Sterling 60&10%
McKinney Mfg. Co.
No. 1, Special, $15 60&10%
No. 2, Standard, $18 60&10%
Hinged Hangers, $16 50%
Meyers' Stayon Hangers 60%
Richards Mfg. Co.:
Pioneer Wood Track No. 8 $2.15
Ball B'r'g Steel Track No. 10 $2.40
Roller B'r'g Steel Track No. 12 $2.80
Ball B'r'g Steel Track No. 18 $2.40
Roller B'r'g Steel Track No. 14 $2 80
Hero, Adjustable Track No. 19 50%
Adjustable Track Tandem Trolley Track No. 16 50%
Seal, Steel Track No. 8 $2.40
Auto Adjustable Track No. 22 40&10%
Trolley B. D. No. 17 $1.40
Trolley F. D. No. 120 $2.35
Trolley F. D. No. 121 $2.45
Trolley F. D. No. 151 $2.60
Safety Underwriters F. D. No. 101 $2.25
Tandem No. 44 70&5%
Trolley F. D. No. 151 $3.00
Palace, Adjustable Track No. 132 90&10&5%
Royal, Adjustable Track No. 122 40&10%
Ives' Wood Track No. 1 $2.15
Trolley B. D. No. 20 $1.35
Trolley B. D. No. 24 $1.45
Trolley B. D. No. 27 $1.50
Trolley B. D. No. 28 $1.60
Roller Bearings Nos. 39, 40, 41, 43, 44 70&5%
Anti-friction No. 42 60&10%
Hinged Tandem No. 48 60%
Folding Door B. B. Swivel No. 125 30%
Safety Door Hanger Co.:
Storm King Safety 60%
U. S. Standard Hinge 60%
Stowell Mfg. and Foundry Co.:
Acme Parlor Ball Bearing 10%
Ajax Hinge Door 60%
Apex Parlor Door 50&10&5%
Atlas 60%
Baggage Car Door 50%
Climax Anti-Friction 50&10%
Elevator 40%
Express 30%
Freight Car Door 60%
Interstate 60&10%
Lundy Parlor Door 50&10%
Magic 60%
Matchless 60&10%
Nansen 70&5%
Parlor Door 50&10%
Railroad 50&10%
Rex Hinge Door 60%
Street Car Door 50%
Steel, Nos. 300, 404, 500 50&10%
Underwriter's Fir Door 40%
Wild West Warehouse Door 50%
Zenith for Wood Track 50&10%
A. L. Swett Iron Works:
Check Back 70%
Climax Anti-Friction 50&10%
Eagle 70%
Hylo Hinge 60%
New Perfection 60%
Pilot 60%
Pilot Hinge 60%
Rider Wooster 65%
Western Pattern 70%
Taylor & Boggis Fy Co.'s Kidder's Roller Bearing 50&15&10&5%
Wilcox Mfg. Co.:
Bike Roller Bearing 60&10%
C. J. Roller Bearing 60&10%
Cycle Ball Bearing 50%
Dwarf Ball Bearing 40%
Ives, Wood Track 60&10%
L. T. Roller Bearing 60&10&5%
New Era Roller Bearing 50&10%
O. K. Roller Bearing 60&10&5%
Prindle, Wood Track 60%
Richards' Wood Track 60%
Richards' Steel Track 50&10%
Spencer Roller Bearing 60&10%
Tandem Nos. 1 and 2 60%
Underwriters' Roller Bearing 40%
Velvet 50%
Wilcox Auditorium Ball Bearing 20%
Wilcox Barn Trolley No. 123 40%
WilcoxElv. Door, Nos 112 and 122 ¼ 50%
Wilcox Elv. Door, No. 182 40%
Wilcox Fire Trolley, Roller Bearing 30%
Wilcox Le Roy Noiseless Ball Bearing 40%
Wilcox New Century 50&10&10%
Wilcox O. K. Steel Track 50%
Wilcox O. K. Trolley 50%
Wilcox Trolley Ball Bearing 40%
Wilcox Wideman Narrow Gauge, Ball Bearing 40%
Extra 5@10% often given.
For Track, see *Rail*

Hangers, Garment—

Pullman Trouser, No. 1, ℔ gro. $9.00
Pullman Trouser, No. 4, ℔ gro. $24.00
Victor Folding ℔ gro. $9.60
Western, W. G. Co. 70&10%

Gate—

Myers' Patent Gate Hangers, ℔ doz net 4.80

Hasps—

McKinney's Perfect Hasp, ℔ doz. 50%

Hatchets—

Regular list ....25c&10@33⅓&5%

Heaters Carriage—

Clark, No 5, $1.75; No. 5B, $2.00; No 3, 2.25; No. 3D, $2.75; No. 7D, $3.00; No. 8E, $4.25; No. 1, $8.50 1%
Clark Coal, $0.75 ℔ doz. 10%

Hinges—

Blind and Shutter Hinges—

Surface Gravity Locking Blind: (Victor; National; 1868 O. P. Niagara; Clark's O. P.; Clark's Tip; Buffalo.)

No.	1	3	5
Doz. pair	$0.85	1.75	3.50

Mortise Shutter: (L. & P., O. S., Dixie, &c.)

No.	1	1½	2	2½
Doz. pair	$0.70	.65	.60	.55

Mortise Reversible Shutter, (Buffalo, &c.)

No.	1	1½	2
Doz. pair	$0.75	.70	.65

North's Automatic Blind Fixtures, No. 2, for Wood, $9.00; No. 3, for Brick, $11.50 10%
Parker 70@75%
Reading's Gravity 60%
Sargent's, Nos. 1, 3, 5, 11 & 18 75%
Stanley's Steel Gravity Blind Hinges, ℔ doz. sets, without screws, $0.90 with screws, $1.20.
Wrightsville H'dware Co.:
O. S., Lull & Porter 75&5%
Acme, Lull & Porter 75%
Queen City Reversible 75%
Shepard's Noiseless, Nos. 60, 65, 55, 70 & 10%
Niagara, Gravity Locking, No. 1, 3 & 5 75%
1868, Old Pat'n, Nos. 1, 3 & 5 75%
Tip Pat'n, Nos. 1, 3 & 5 75%
Buffalo Gravity Locking, Nos. 1, 3 & 5 75%
Shepard's Double Locking, Nos. 20 & 25 70%
Champion Gravity Locking, No. 75 75%
Steamboat Gravity Locking, No. 10 75%
Pioneer, Nos. 60, 45 & 5¼ 75%
Empire, Nos. 101 & 103 70%
W. H. Co.'s Mortise Gravity Locking, No. 2 60%

Gate Hinges—

Clark's or Shepard's—Doz. sets:

No.	1	2	3
Hinges with Latches	$2.00	2.70	5.00
Hinges only	$1.40	2.05	3.80
Latches only	.70	.70	.35

New England:
With Latch ....doz. ....@$2.00
Without Latch ....doz. ....@$1.60
Reversible Self-Closing:
With Latch ....doz. ....@$1.75
Without Latch ....doz. ....@$1.35
Western:
With Latch ....doz. $1.75
Without Latch ....doz. $1.15
Wrightsville H'dware Co.:
Shepard's or Clark's, doz. sets,

No.	1	2	3
Hinges with Latches	$2.00	2.70	5.00
Hinges only	1.40	2.05	3.80
Latches only	.70	.70	1.35

Pivot Hinges—

Bommer Bros. Pivot 40%
Lawson Mfg. Co. Matchless 45%

Spring Hinges—

Holdback Cast Iron gro. ..$9.00@9.50
Non-Holdback, Cast Iron, gro. $8@8.50
J. Bardsley
Bardsley's Non-Checking Mortise Floor Hinges 45%
Bardsley's Patent Checking 15%
Bommer Bros.:
Bommer Ball Bring Floor Hinges 40%
Bommer Spring Hinges 40%
Chicago Spring Butt Co.:
Chicago Spring Hinges 25%
Triple End Spring Hinges 50%
Chicago (Ball Bearing) Floor Hinge 50%
Garden City Engine House 25%
Keene's Saloon Door 25%
Columbian Hdw. Co.:
Acme, Wrt. Steel 30%
Acme, Brass 25%
American 30%
Columbia, No. 14 ℔ gr. $9.00
Columbia, No. 18 ℔ gr. $95.00
Columbia, Adjustable, No. 7, ℔ gr. $12.00
Gem, new list 30%
Clover Leaf ℔ gr. $12.50
Oxford, new list 30%
Lawson Mfg. Co. Matchless 30%
Richards Mfg. Co.:
Superior Double Acting Floor Hinges 40%
Shelby Spring Hinge Co:
Chief Ball Bearing Floor Hinge 50%
Ohio Detachable Screen Door Hinge ℔ gro. $12.00
The Stover Mfg. Co.:
Ideal, No. 16, Detachable, ℔ gr $12.50
Ideal, No. 4 ℔ gr. $9.00
New Idea No. 1 ℔ gr. $9.00
New Idea, Double Acting 45%
New Idea Floor 45%
Van Wagoner:
Ball Bearing 25%
No. 777 Sh't Steel Holdb'k, ℔ gro. pr. $9
Extra 10% often given on most of these Hinges.

Wrought Iron Hinges—

Strap and T Hinges, &c., list Mar 15, 1901:
Light Strap Hinges 80c&10%
Heavy Strap Hinges 80c&10c&10%
Light T Hinges 75c&10c&5%
Heavy T Hinges 75c&5%
Extra Heavy T Hinges 80c&10%
Hinge Hasps 70%
Cor. Heavy Strap 80c&20c&10%
Cor. Ex. Heavy T 80c&20
Extra 3 or 4 ℔ ms

Screw Hook and Strap. { *6 to 12 in* ....lb. 3¼c; *14 to 20 in* ....lb. 3 c; *22 to 36 in* ....lb. 2¾c }
Screw Hook and Eye:
¾ to 1 inch ....lb. 6 c
⅝-inch ....lb. 7 c
½-inch ....lb. 9 c

Hitchers, Stall—

Covert Mfg. Co. Stall Hitchers 35%

Hods, Coal—

	15	16	17	18 inch.
Galv. Open	$2.50	2.75	3.00	3.25 ℔ doz.
Jap. Open	$2.00	2.25	2.50	2.75 ℔ doz.
Galv. Funnel	$3.00	3.25	3.50	3.75 ℔ doz.
Jap. Funnel	$2.50	2.75	3.00	3.25 ℔ doz.

Masons, Etc.—

Cleveland Wire Spring Co.:
Steel Mortar ....each $1.45
Steel Brick ....each $1.10

Hoes— Eye—

Scovil and Oval Pattern 60c&10@60c&10c&10%
Grub, list Feb. 23, 1899 70c&10@75c&10%
D. & H. Scovil 35%

Handled—

Aug. 1, 1899, List:
Field and Garden 70c&10%
Smith's Patent 50%
Meadow & Rhode Island 75%
Black Diamond 70c&10%
Mortar and Street 70c&10c&10%
Planters' 75c&12½%
Cotton 70c&10c&10%
Cotton Chopper 75c&12½%
Weeding Hoes 66⅔c&15%
Steel Weeders 66⅔c&15%
Multirake Weeders 66⅔c&15%
Ft. Madison Cotton Hoe 70&10c&10%
Ft. Madison Crescent Cultivator Hoe per doz 70&10%
Ft. Madison Mattock Hoes:
Regular Weight ℔ doz. 66⅔%
Junior Size ℔ doz. $4.00
Ft. Madison Sprouting Hoe, ℔ doz. 50%
Ft. Madison Dixie Tobacco Hoe 75&10c&7½%
Kretsinger's Cut Easy 70&10%
Warren Hoe 45&10%
W. & C. Ivanhoe 75&2%
B. B. 6 in, Cultivator Hoe $3.15
B. B., 6¼ in $3.35
Acme Weeding ....℔ doz., net, $4.35
W. & C. Lightning Shuffle Hoe, ℔ doz. $4.85

Hoisting Apparatus—

See Machines, Hoisting.

Holders— Bit—

Angular, ℔ doz. $24.00 45&10%

Door—

Empire 50%
Bardsley's 45%

File and Tool—

Nicholson File Holders and File Handles 33⅓&40%

Hooks—Cast Iron—

Bird Cage, Reading 60%
Bird Cage, Sargent's List 60&10%
Ceiling, Sargent's List 50&10&10%
Clothes Line, Reading List 60&10%
Clothes Line, Sargent's List 50&20&10%
Coat and Hat, Sargent's List 50&10%
Clothes Line, Stowell's 70%
Coat and Hat, Reading 45&20%
Coat and Hat, Stowell's 70%
Coat and Hat, Wrightsville 65%
Harness, Reading List 60&5%
Harness, Stowell's 60%
School House, Stowell's 70%

Wire—

Belt ....80c—%
Wire C. & H. Hooks 75@75&10%
Atlas, Coat and Hat:
Single Cases 75%
10 Case Lots 75&10%
Columbian Hdw Co. Gem 60&10%
Parker Wire Goods Co.: King 75&10%
Van Wagoner, Coat and Hat 70%
Western W. G. Co. Molding 75%

Wire Goods Co.:
Acme.....60&10%
Chief.....70%
Crown.....70&10%
Czar.....65%
V Brace.....70&10%
Czar Harness.....50&10%

Wrought Iron—
Box, 6 in., per doz. $1.00; 8 in., $1.25; 10 in., $2.50.
Cotton.....doz. $1.05@1.25
Wrought Staples, Hooks, &c.—
See *Wrought Goods.*

Miscellaneous—
Hooks, Bench, see *Stops, Bench.*
Bush, Light, doz. $5.50; Medium, $6.00; Heavy, $6.50

Grass.....Nos.	*1*	*2*	*3*	*4*
Best.....	*$1.50*	*1.75*	*2.00*	
Common.....	*$1.30*	*1.30*	*1.40*	*1.60*

Potato and Manure.....60&15%
Wh. Metree.....lb. 5½@6c
Hooks and Eyes:
Brass.....60&10&10@70%
Malleable Iron.....70&5@70&10%
Covert Mfg. Co. Gate and Scuttle Hooks 35%
Covert Saddlery Works' Self Locking Gate and Door Hook.....60%
Ft. Madison Cut-Easy Corn Hooks, ₱ doz. $3.35 net
Bench Hooks—See *Bench Stops.*
Corn Hooks—*See Knives, Corn.*

Horse Nails—See *Nails, Horse*
Horseshoes—
See *Shoes, Horse.*

Hose Rubber—
Garden Hose, ¾-inch:
Competition.....ft. 4½@ 5 c
3-ply Standard.....ft. 6½@ 7 c
4-ply Standard.....ft. 7½@ 8 c
3-ply extra.....ft. 8½@ 9 c
4-ply extra.....ft. 10 @10½c
Cotton Garden, ¾-in., coupled:
Low Grade.....ft. 6 @7 c
Fair quality.....ft. 8 @9 c

Irons—Sad—
From 4 to 10.....lb. 2¾@3 c
B. B. Sad Irons.....lb. 3¼@3½c
Chinese Laundry.....lb. 4¾@5c
Chinese Sad.....lb. 4@4¼c
Mrs. Potts', cents per set:

Nos.....	*50*	*55*	*60*	*65*
JapdTops	*62*	*59*	*72*	*69*
TinnTops	*65*	*62*	*75*	*72*

New England Pressing lb..3¾@4c

Pinking—
Pinking Irons.....doz. 50@60c

Soldering—
Soldering Coppers 2¼ and 3..19@20c
1¼ and 2.....21@22c

Jacks Wagon—
Covert Mfg. Co.:
Auto Screw.....30&5%
Steel.....45&2%
Covert's Saddlery Works':
Daisy.....60&10%
Victor.....60%
Lockport.....50%
Lane's Steel.....30&10&5%
Richards' Tiger Steel, No. 190.....40%

Kettles—
Brass, Spun, Plain.....20@25%
Enameled and Cast Iron—See *Ware, Hollow.*

Knives—
Butcher, Kitchen, &c.—
Foster Bros.' Butcher, &c.....30%
Smith & Hemenway Co.....40&10%
Wilkinson Shear & Cutlery Co.....50%

Corn—
Withington Acme, ₱ doz., $2.65; Dent, $2.75; Adj. Serrated, $2.20; Serrated, $2.10; Yankee No. 1, $1.50; Yankee No. 2, $1.15.

Drawing—
Standard List.....70&10@75&10%
C. E. Jennings & Co. Nos. 45, 46.....60%
Jennings & Griffin, Nos. 41, 42.....60%
Ohio Tool Co.'s.....70%
Swan's.....70&10&2½%
Watrous.....16⅔%
L. & I. J. White.....20&5@25%

Hay and Straw—
Iwan's Sickle Edge.....₱ doz. $9.50
Iwan's Serrated.....₱ doz. $10.00

Mincing—
Buffalo.....₱ gro. $13.00

Miscellaneous—
Furriers'.....doz. $3.00@3.55
Westenhoim's.....₱ doz. $3.00@3.25

Knobs—
Base, 2¼-inch, Birch, or Maple, Rubber tip, gro.....$1.10@1.15
Carriage, Jap, all sizes..gro. 40@45c
Door, Mineral.....doz. 65@70c
Door, Por. Jap'd.....doz. 70@75c
Door, Por. Nickel....doz. $2.05@2.15
Bardsley's Wood Door, Shutter, &c.....15%
Picture, Sargent's.....60&10&10%

Lacing Leather—
See *Belting, Leather.*

Ladders, Store Etc.—
Lane's Store.....25%
Myers Noiseless Store Ladders.....50%
Richards Mfg. Co.:
Improved Noiseless, No. 112.....40%
Climax Shelf, No. 113.....40%
Trolley, No. 109.....40%

Ladles—Melting—
L. & G. Mfg. Co, Low List.....25%
P. S. & W.....50%
Reading.....50%
Sargent's.....50&10%

Lanterns—Tubular—
Regular Tubular No. 0. doz. $4.35@4.75
Lift Tubular..No. 0..doz. $4.75@5.25
Hinge Tubular. No. 0 .doz. $4.75@5.25
Other Styles.....40&10@40&10&5%

Bull's Eye Police—
No. 1, 2¾ inch.....$2.50@2.75
No. 2, 3 inch.....$2.75@3.00

Lasts and Stands, Shoe—
Stowell's Atlas, Malleable Iron.....50%
Stowell's Badger, Cast Iron.....50%

Latches—Thumb—
Roggin's Latches, with screw. doz 35@40c

Door—
Richards' Bull Dog, Heavy, No. 125....40%
Richards' Trump, No. 127.....50%

Leaders Cattle—
Small.....doz. 55c; large, 60c
Covert Mfg. Co.....35%

Lifters, Transom—
R & E.....33⅓%

Lines—
Wire Clothes, Nos...	*18*	*19*	*20*
100 feet.....	*$2.20*	*2.00*	*1.65*
75 feet.....	*$1.80*	*1.70*	*1.30*

Samson Cordage Works:
Solid Braided Chalk, No. 0 to 3.....40%
Silver Lake Braided Chalk, No. 0, $6.00; No. 1, $6.50; No. 2, $7.00; No. 3, $7.50
₱ gr.....20%
Masons' Lines, Shade Cord, &c.: White Cotton, No. 3½, $1.50; No. 4 $2.00; No 4½, $2.50; Colors, No. 3½, $1.75; No. 4, $2.25; No. 4½, $2.75; Linen, No. 3½, $2.50; No. 4, $3.50; No. 4½, $4.50.....20%
Tent and Awning Lines: No. 5, White Cotton, $7.50; Drab Cotton, $8.50.....20%
Clothes Lines, White Cotton: 50 ft., $2.75; 60 ft., $3.25; 70 ft., $3.75; 75 ft., $4.00; 80 ft., $4.25; 90 ft., $4.75; 100 ft., $5.25..20%
Anniston Waterproof Clothes, 50 ft., ₱ gro.: $34.00; Gilt Edge, $32.00; Air Line $32.00; Acme, $17.00; Alabama, $15.00; Empire, $14.00; Advance, $13.50; Oriole, $20.00; Albermarle, $13.50; Eclipse, $12.50; Chicago, $11.00; Standard, $10.00; Columbia, $8.50; Alston, $12.50; Calhoun, $11.00.

Locks—Cabinet—
Cabinet Locks.....33⅓@33⅓&c7⅓%

Door Locks, Latches, &c.—
[Net prices are very often made on these goods.]
Reading Hardware Co.....45&20%
R. & E. Mfg. Co.....40%
Sargent & Co.....40&10%
Stowell's Steel Door Latches.....50%

Elevator—
Stowell's.....50%

Padlocks—
Wrought Iron.....7&10&5@80&5%
R. & E. Mfg. Co. Wrt. Steel and Brass... 75@75&10%

Sash, &c.—
Ives' Patent.:
Bronze and Brass.....62½%
Crescent.....50&10%
Iron.....62½%
Window Ventilating.....60%
Robison Patent Ventilating Sash Lock.....40%
Wrought Bronze and Brass.....55%
Wrought Steel.....55%
Pullman Patent Ventilating Lock.....25%
Reading.....60%

Machines—Boring—
Com. Upright, Without Augers..$2.00
Com. Angular, Without Augers..$2.25

	Without Augers.	
	Upright.	Angular.
R. & E. Mfg. Co.:		
Improved No. 3.	$4.25	No. 1. $5.00
Improved No. 4.	3.75	No. 2. 3.38
Improved No. 5.	2.75	
Jennings'...Nos. 1 and 4		35&5%
Millers' Falls		5.75
Snell's, Rice's Pat.	3.50	2.75

Corking—
Reisinger Invincible Hand Power.....₱ doz $48.00

Fence—
Williams Fence Machines.....each, $5.50

Hoisting—
Moore's Anti-Friction Differential Pulley Block.....30%
Moore's Hand Hoist, with Lock Brake.20%

Ice Cutting—
Chandler's.....12½%

Washing—
Boss Washing Machine Co.: Per doz.
Champion Rotary Banner No. 1..$54.00
Standard Champion No. 1.....$48.00
Standard Perfection.....$36.00
Cinti Square Western.....$30.00
Uneeda American, Round.....$29.00

Mallets—
Hickory.....45&5@50%
Lignumvitæ.....45&5@50%
Tinners', Hickory and Applewood, doz.....50@55c

Mangers, Stable—
Swett Iron Works.....50%

Mashers, Vegetable—
Western, W. G. Co., Potato.....60&10%

Mats—Door—
Elastic Steel (W. G. Co.).....10%

Mattocks—
See *Picks and Mattocks.*

Milk Cans—See *Cans, Milk*

Mills—Coffee, etc.—
Enterprise Mfg. Co.....25@30%
National list Jan. 1, 1904.....30%
Parker's Columbia & Victoria.50&10@60%
Parker's Box and Side.....50&10@60%
Swift, Lane Bros Co.....30%

Mowers, Lawn—
Net prices are generally quoted.
Cheap.....all sizes. $1.75@2.00
Good.....all sizes, $2.25@2.50

	10	*12*	*14*	*16-inch*
High Grade	*4.25*	*4.50*	*4.75*	*5.00*

Continental.....60&5%
Great American.....70%
Great American Ball Bearing, new list. 70%
Quaker City.....70%
Pennsylvania.....60&5%
Pennsylvania, Jr., Ball Bearing.....60%
Pennsylvania Golf.....50%
Pennsylvania Horse.....33⅓&5%
Pennsylvania Pony.....40&5%
Philadelphia:
Styles M., S., C., K. T.....70&5%
Style A, all Steel.....60&5%
Style E, High Wheel.....70&10&5%
Drexel and Gold Coin, low list...40&5%

Nails—
Wire Nails and Brads, Papered. List July 20, 1899.....30@90&10%
Cut and Wire. See Trade Report.
Hungarian, Finishing, Upholsterers', &c. See Tacks.

Horse—

Nos.	6	7	8	9	10	
Anchor	25	21	20	19	18	40&5%
Champ'in.	28	26	25	24	23	50%
Coleman	13	12	12	11	11	net
New Haven	23	21	20	19	18	40&5%
Putnam	23	21	20	19	18	33⅓&5%
New P'tn'm	19	18	17	16	16	10&10%
Western, per lb						8½¢

Jobbers' special brands, per lb. 8@8½c

Picture—

	1½	*2*	*2½*	*3*	*3½ in.*
Brass Head.	*.45*	*.60*	*.70*	*.95*	*1.00 gro.*
Por. Head.	*..*	*1.10*	*1.10*	*1.10*	*.. gro.*

Nippers, See *Pliers and Nippers.*

Nuts—
Cold Punched: Off list.
Mfrs. or U. S. Standard.
Square, plain.....$5.10
Hexagon, plain.....$5.60
Square, C. T. & R.....$5.30
Hexagon, C. T. & R.....$6.00
Hot Pressed:
Mfrs., U. S, or Nar. Gauge Stan'd.
Square Blank.....$5 80
Hexagon Blank.....$6.30
Square Tapped.....$5 80
Hexagon Tapped.....$6 30

Oakum—
Best or Government.....lb. 6½c
Navy.....lb. 5 c
U. S. Navy.....lb. 6 c
Plumbers' Spun Oakum.....2½c
In carload lots ¼c lb. off f. o. b. New York.

Oil Tanks—See *Tanks, Oil.*

Oilers—
Brass and Copper.....50&10%
Tin or Steel.....65&10%
Zinc.....65&10%
Chas. or Paragon:
Brass and Copper.....45&10@50%
Tin or Steel.....65&10%
Zinc.....65&10%
Malleable, Hammers' Improved, No. 1, $3.60; No. 2, $4; No. 3, $4.40 ₱ doz. 20%
Malleable, Hammers' Old Pattern, same list.....50&10%
American Tube & Stamping Co.:
Spring Bottom Cans.....70@70&10%
Railroad Oilers etc,.....60@60&10%

Openers—Can—
French.....doz. 35c
Iron Handle.....doz. 25@27c
Sprague, Iron Hdle..per doz 35@50c
Sardine Scissors..doz. $1.75@$3.00
National.....50%
Stowell's Sprague.....per doz. 35@45c

Egg—
Nickel Plate.....per doz., $2.00
Silver Plate.....per doz., $4.00

Packing—
Asbestos Packing, Wick and Rope, 14½@15c lb.

Rubber—
Sheet, C. I.....8@10c
Sheet, C. O. S.....9@15c
Sheet, C. B. S.....10@14c
Sheet, Pure Gum.....50@65c
Sheet, Red.....40@50c
Jenkins' '96, ₱ lb 80¢.....25@25&5%

Miscellaneous—
American Packing.....7@10c lb.
Cotton Packing.....16@25c lb.
Italian Packing.....9@12½c lb.
Jute.....4@4½c lb.
Russia Packing.....8@11c lb.

Pails—Creamery
S. S. & Co., with gauges.. No 1 $6.25; No. 2, $6.50 ₱ doz.

Galvanized—
Price per doz.

	Quart.....	*10*	*12*	*14*
Water, Regular		*1.50*	*1.75*	*2.00*
Water, Heavy.....		*2.75*	*3.00*	*3.25*
Fire, Rd. Bottom.		*2.20*	*2.60*	*2.80*
Well.....		*2.25*	*2.50*	*2.75*

Pans—Dripping—
Standard List.....60&10@60&10&5%

Fry—
Common Lipped:

No.	*1*	*2*	*3*	*4*	*5*
Per doz.	*$0.85*	*1.00*	*1.10*	*1.30*	*1.50*

Roasting and Baking—
Regal, S. S. & Co., ₱ doz., Nos. 5, $4.50; 10 $5.25; 20, $5.75; 30, $6.25.
Savory, ₱ doz., net, Nos. 200, $9.00; 400, $15.00.
Simplex, ₱ gro.:

No.	40	50	60	140	150	160
	$30.00	35.00	42.00	34.00	39.00	48.00

Paper—Building Paper—
Asbestos: lb.
Building Felt.....2¾c
Mill Board, sheet, 40 x 40 inches 3½c
Mill Board, roll, thicker than 1-16 inch.....3½c
Mill Board, roll, 1-16 in. thick and less.....2½c

	Per roll
Rosin Sized Sheathing:	*500 sq. ft.*
Light wt., 25 lbs. to roll..	*$0.40@0.45*
Medium wt., 30 lbs. to roll..	*$0.45@0.50*
Heavy wt., 40 lbs. to roll..	*$0.65@0.70*
Black Water Proof Sheathing, 500 Sq ft, 1 ply, 60c; 2 ply, 85c; 3 ply, $1.10; 4 ply, $1.25.	
Deafening Felt, 2, 6 and 4½ sq. ft. to lb., ton.....	*$41.00*
Red Rope Roofing, 250 sq. feet per roll.....	*$1.75*

NOTE.—*These goods are often sold at delivered prices.*

Tarred Paper.
1 ply (roll 200 sq. ft.), ton..$32.50@35.00
2 ply, roll 108 sq. ft.....55@60c
3 ply, roll 108 sq. ft.....78@80c
Slater's Felt (roll 500 sq. ft.).....75c
NOTE.—*Above prices often include delivery, and are for Eastern territory, where prices are controlled by agreement between the manufacturers. In open territory much lower prices are current.*
R. R. M. Stone Surfaced Roofing (roll 110 sq. ft.).....$2.75

Sand and Emery—
Flint Paper and Cloth...50&10@60%
Garnet Paper and Cloth.....25%
Emery Paper and Cloth...50&10@60%.

Parers—Apple—
Advance.....₱ doz. $4.00
Baldwin.....₱ doz. $4.00
Bonanza Improved.....each $6.50
Daisy.....₱ doz. $4.00
Dandy.....each $7.50
Eureka Improved.....each $20.00
Family Bay State.....₱ doz. $15.00
Improved Bay State.....₱ doz. $36.00
Little Star.....₱ doz $5.00
New Lightning.....₱ doz. $7.00
Reading 72.....₱ doz. $3.25
Reading 78.....₱ doz. $6.25
Rocking Table.....₱ doz. $6.20
Turn Table '98.....₱ doz. $9.00
White Mountain.....₱ doz. $5.00

Potato—
Saratoga.....₱ doz. $7.00
White Mountain.....₱ doz. $6.00

Picks and Mattocks—
List Feb. 23, 1899.....70&10@75&10%

Pinking Irons—
See *Irons, Pinking.*

Pins—Escutcheon—
Brass.....60@60&10%
Iron, list Nov. 11, '95.....60@60&10%

Pipe, Cast Iron Soil—
Standard, 2-6 in.....50&10
Extra Heavy, 2-6 in.....65%
Fittings.....70%

Pipe, Merchant.
Carload Lots,

	Steel.		*Iron.*	
	Blk.	*Galv.*	*Blk.*	*Galv.*
⅛ and ¼-inch..	*71%*	*55%*	*69%*	*53%*
⅜ and ½-inch..	*75%*	*63%*	*73%*	*61%*
¾ to 6 inch...	*79%*	*69%*	*77½%*	*67½%*
7 to 12 inch....	*74%*	*59%*	*72½*	*57%*

Pipe, Sewer—
Jobbers' Prices—
Standard Pipe and Fittings, 2 to 12 in.
New England.....67%
New York and New Jersey.....70%
Maryland, Delaware, East Penn. 72%
West Penn and West Va.....73%
Virginia.....75%
Ohio, Michigan and Ky.....75%
Indiana.....77%
Carload lots are generally delivered.

Pipe, Stove—
Edwards' Nested Stove Pipe:

	C. L.	L. C. L.
5 in., per 100 joints ...	$7.00	$8.00
6 in., per 100 joints....	7.50	8.50
7 in., per 100 joints....	8.50	9.50

Planes and Plane Irons—
Wood Planes—
Bench, First quality....50&5@50&10%
Bench, Second qual....50&5@50&10%
Molding.....33⅓&5@33⅓&10%
Bailey's (Stanley R. & L. Co) 5&10@25&10&10%
Chapin-Stephens Co.:
Bench, First Quality.....40@40&10%
Bench, Second Quality.....50@50&10%
Molding.....33⅓&5@33⅓&10%
Toy and German.....30@40&10%
Chaplin's.....60%
Ohio Tool Co.:
Bench, First Quality.....40@40&10%
Bench, Second Quality.....50@50&10%
Molding.....33⅓&5@33⅓&10%
Adjustable Wood Bottom.....60%
Union.....60%

Iron Planes—
Bailey's (Stanley R. & L. Co).....25&10@25&10&10%
Chaplin's Iron Planes.....50&10%
Miscellaneous Planes (Stanley R. & L. Co.).....20&10@20&10&10%
Ohio Tool Co.'s Iron Planes.....60%
Sargent's.....60&10%
Union.....60%

Plane Irons—
Wood Bench Plane Irons.....30&5@30&10%
Buck Bros.....30%
Chapin-Stephens Co.....30@30&10%
Ohio Tool Co.....30%
Stanley R. & L. Co...20&10@20&10&10%
Union.....30%
L. & I. J. White.....20&5@25%

Planters, Corn, Hand.
Kohler's Eclipse.....₱ doz. $8.50

Plates—
Felloe.....lb. 3¼@4c
Self-Sealing Pie Plates (S. S. & Co.), ₱ doz. $2.00.....50%

Pliers and Nippers—
Button Pliers.....75@75&10%
Gas Burner, per doz., 5 in., $1.25@ $1.50; 6 in., $1.45@$1.50
Gas Pipe.. 7 8 10 12-in.
$2.00 $2.25 $3.00 $3.75
Acme Nippers.....50@50&5%
Cronk & Carrier Mfg. Co.:
American Button.....75&10%
Cronk's.....60%
Improved Button.....60&10%
Stub's Pattern.....50%
Combination and others.....33⅓%
Heller's Farriers' Nippers, Pincers, and Tools 40&10@40&10&10%
P., S. & W. Tinners Cutting Nippers, 30@30&10%
Swedish Side, End and Diagonal Cutting Pliers.....50%
Utica Drop Forge & Tool Co.:
Pliers and Nippers, all kinds.....40%

Plumbs and Levels—
Chapin Stephens Co.:
Plumbs and Levels.....30@30&10&10%
Chapin's Imp. Brass Cor.....40@40&10&10%
Pocket Levels.....30@30&10&10%
Disston's Plumbs and Levels.....70%
Disston's Pocket Levels.....70
C. E. Jennings & Co.'s Iron.....25%
C. E. Jennings & Co.'s Iron, Adjustable. 40&7½%
Stanley R. & L. Co...30&10@30&10&10%

Stanley's Duplex.....20@20&10&10%
Woods' Extension.....33⅓&

Poachers, Egg—

Buffalo Steam Egg Poachers, ₱ doz., No. 1, $4.00; No. 2, $5.00; No. 3, $6.00; No. 4, $12.00.....50%

Points, Glaziers'—

Bulk and 1 lb. papers.....lb. 8 c
¼-lb. papers.....lb. 8¾c
¼-lb. papers.....lb. 9½c

Pokes, Animal—

Ft. Madison Hawkeye.....₱ doz. $3.25
Ft. Madison Western.....₱ doz. $4.00

Police Goods—

Manufacturers' Lists.....25@25&5%
Tower's.....25%

Polish—Metal—

Prestoline Liquid, No. 1 (¼ pt.), ₱ doz. $3.00; No. 2 (1 qt.), $9.72.....40%
Prestoline Paste.....40&10%
George William Hoffman:
U. S. Metal Polish Paste, 3 oz. boxes, ₱ doz. 50¢; ₱ gr. $4.50; ¼ ℔ boxes, ₱ doz. $1.25; 1 ℔ boxes, ₱ doz. $2.25.
U. S. Liquid, 8 oz. cans, ₱ doz. $1.25; ₱ gr. $12.00.
Barkeepers' Friend Metal Polish, ₱ doz. $1.75; ₱ gr. $18.00.
Wynn's White Silk, ¼ pt. cans, ₱ doz.....$2.00

Stove—

Black Eagle Benzine Paste, 5 ℔ cans.....
₱ ℔ 10¢
Black Eagle, Liquid, ¼ pt. cans ₱ doz. 75¢
Black Jack Paste, ¾ ℔ cans, ₱ gro. $9.00
Black Kid Paste, 5 ℔ can.....each, $0.65
Ladd's Black Beauty, gr. $10.00.....50%
Joseph Dixon's, ₱ gr. $5.75.....10%
Dixon's Plumbago.....₱ ℔ 8¢
Fireside.....₱ gr. $2.50
Gem, ₱ gr. $4.50.....10%
Japanese.....₱ gr. $3.50
Jet Black.....₱ gr. $3.50
Peerless Iron Enamel, 10 oz. cans.....
₱ doz. $1.50
Wynn's:
Black Silk, 5 ℔ pail.....each 70¢
Black Silk, ¼ ℔ box.....₱ doz. $1.00
Black Silk, 5 oz. box.....₱ doz. $0.75
Black Silk, ½ pt. liq.....₱ doz. $1.00

Poppers, Corn—

1 qt., Square.....gro. *$9.00*
1 qt., Round.....gro. *$10.00*
1½ qt., Square.....gro. *11.00*
2 qt., Square.....gro. *13.00*

Post Hole and Tree Augers and Diggers—

See also *Diggers, Post Hole, &c.*

Posts, Steel—

Steel Fence Posts, each, 5 ft., 42¢; 6 ft., 46¢; 6½ ft., 48¢.
Steel Hitching Posts, each.....$1.30

Potato Parers—

See *Parers, Potato.*

Pots— Glue—

Enameled.....40%
Tinned.....35%

Powder—

In Canisters:
Duck, 1 lb. each.....45c
Fine Sporting, 1 lb. each.....75c
Rifle, ¼-lb. each.....15c
Rifle, 1-lb. each.....25c
King's Semi-Smokeless:
Keg (25 ℔ bulk).....$6.50
Half Keg (12½ ℔ bulk).....$3.50
Quarter Keg (6¼ ℔ bulk).....$1.90
Case 24 (1 ℔ cans bulk).....$8.50
Half case (1 ℔ cans bulk).....$4.50

King's Smokeless:	Shot Gun	Rifle
Keg (25 ℔ bulk)	$12.00	$15.00
Half Keg (12½ ℔ bulk)	6.25	7.75
Quarter Keg (6¼ ℔ bulk)	3.25	4.00
Case 24 (1 ℔ cans bulk)	14.00	17.00
Half case 12 (1 ℔ cans bulk)	7.25	8.75

Robin Hood smokeless Shot Gun..50&20%

Presses—Fruit and Jelly—

Enterprise Mfg. Co.....20@25%

Seal Presses—

Morrill's No. 1, per doz. $30.00.....50%

Pruning Hooks and Shears—See *Shears.*

Pullers, Cork—

Invincible Cork Puller.....$21.00

Pullers, Nail—

Cyclops.....50%
Miller's Falls, No. 3, per doz. $12.00.....
33⅓&10%
Pearson No. 1, Cyclone Spike Puller, each $20.00.....50%
Pelican, ₱ doz. $9.00.....40&10%
Scranton, Case Lots:
No. 2 B (large).....$5.50
No. 3 B (small).....$5.00
Smith & Hemenway Co.:
Diamond B, No. 2, case lots, ₱ doz $6.00
Diamond B, No. 3, case lots, ₱ doz $5.50
Giant No. 1, ₱ doz. $18; No. 2, $16.50; No. 3, $15.....40%

Pulleys—Single Wheel—

Inch.....	2	2¼	3
Awning...doz	$0.55	.85	1.15

Hay Fork, Swivel or Solid Eye.....
doz., 4 in., $1.15; 5 in., $1.40

Inch.....	2	2¼	2½
Hot House.doz	$0.70	.90	1.35
Inch.....	1¼	1½	1¾ 2
Brew.....doz	$0.16	.19	.23 .30
Inch.....	1¼	2	2¼ 2½
Side.....doz	$0.30	.40	.55 .63
Inch.....	1¼	1¾	2 2½
Tackle....doz	$0.30	.42	.58 1.00

Stowell's:
Ceiling or End, Anti-Friction..60&10%
Dumb Waiter, Anti-Friction.....60&10%
Electric Light.....60%
Side, Anti-Friction.....60&10%

Sash Pulleys—

Common Frame; square or Round End, per doz., 1¼ and 2 in...16@19c
Auger Mortise, no Face Plate, per doz. 1¼ and 2 in......16@19c
Auger Mortise, with Face Plate, per doz., 1¼ and 2 in......16@19c
Acme.....1¼in., 16c; 2 in., 19c
Fox-All-Steel, Nos. 3 and 7, 2 in. ₱ doz 50¢
Grand Rapids All Steel Noiseless....50%
Ideal.....70&10%
Niagara.....1¼ in., 16c; 2 in., 19c
No. 26, Troy....1¼ in., 14½c; 2 in., 16½c
Star.....1¼ in., 16c; 2 in., 19c
Tackle Blocks—See *Blocks.*

Pumps—

Cistern.....60@60&10%
Pitcher Spout.....80@80&10%
Wood Pumps, Tubing, Etc....45@50%
Barnes Dbl. Acting (low list).....50&10%
Barnes' Pitcher Spout.....50%
Contractors' Rubber Diaphragm No. 2 B. & L. Block Co.....$16.00
Daisy Spray Pump.....₱ doz. $7.20
Flint & Walling's, Fast Mail Hand, (Low List).....55%
Flint & Walling's Fast Mail (low list).....
55&5%
Flint & Walling's Tight Top Pitcher .80%
National Specialty Mfg. Co., Measuring, $5.00.....70%
Mechanical Sprayer.....$7.20
Myer's Pumps, low list.....50%
Myers' Power Pumps.....50%
Myers' Spray Pumps.....50%

Pump Leathers—

Plunger and Lower Valve—Per gro.:

Inch..	2	2¼	2½	2¾
	$2.20	2.50	2.75	3.00
Inch..	3	3¼	3½	3¾ 4
	$3.30	3.60	3.85	4.10 4.40

Plunger Cup Leathers—Per 100:

Inch	2¼	3	3½	4
	$2.75	3.85	5.00	6.00

Punches—

Saddlers' or Drive, good...doz. 50@75c
Spring, single tube, good quality...
$1.75@2.00
Revolving (4 tubes)...doz. $3.50@3.75
Bemis & Call Co.'s Cast Steel Drive....50%
Bemis & Call Co.'s Check.....55%
Morrill's No. 1 (A.B.C.), ₱ doz., $15.00 .50%
No. 2, ₱ doz. $22.50.....50%
Hercules, each $7.50.....50%
Niagara Hollow Punches.....40%
Niagara Solid Punches.....55&10%
Steel Screw, B & K. Mfg. Co.....50%
Tinners' Hollow, P., S. & W. Co. 35@35&5%
Tinners' Solid, P., S. & W. Co., ₱ doz., $1.44.....60%

Rail— Barn Door, &c.—

Cast Iron, Barn Door: Flange Screw Holes for Rd. Groove Wheels:

½	⅝	¾ *in.*
$1.70	$2.10	$3.00 *100 feet.*

Angular for Sq. Groove Wheels:

Small.	*Med.*	*Large.*
$1.50	1.90	2.00 *100 feet.*

Sliding Door, Iron Painted..2¼@2¾c
Sliding Door, Wrought Brass, 1¼ in.....lb.36c...30%
Allith Mfg. Co.:
No. 1, Reliable Hanger Track, ₱ ft..3½¢
No. 2, Reliable Hanger Track, ₱ ft...7¢
Cronk's:
Double Braced Steel Rail, ₱ foot....3¢
O. N. T. Rail.....2¾¢
Griffin's.:
xxx, per 100 ft., 1 x 3-16 in., $3.00; 1¼ x 3-16 in., $3.50.
Hinged Hanger, per 100 ft. 1 x 3-16 in., $3.10; 1¼ x 3-16 in., $3.60.
Lane's:
Hinged Track, ₱ 100 ft., 1 in., $3.70; 1¼ in. $4.40
O. N. T., ₱ 100 ft., 1 inch, $2.75; 1¼ inch, $3.50; 1½ inch, $4.00.
Standard, 1¼ in., ₱ 100 ft.....4.00
Lawrence Bros.:
₱ 100 ft. No. 201, $4.00; No. 202, $4.40
New York, 1 x 3-16 in., ₱ 100 ft. $2.75
McKinney's.:
Hinged Hanger Rail ₱ foot, 11¢.....50%
None Better.....₱ ft. 3½¢
Standard.....₱ ft. 4 ¢
Myers' Stayon Track.....60%
Richards Mfg. Co.:
Common 1 x 3-16, $2.75; 1¼ x 3-16, $3.25; 1¼ x 3 16, $3.50
Special Hinged Hanger Rail.....$4.40
Fire Door Track, ₱ ft. 2¼ x ⅜, 15¢; 3½ x ¼, 9¢.
Lag Screw Rail, No. 65.....40%
Gauge Trolley Track, ₱ ft. No. 81, 10¢; No. 82, 15¢; No. 83, 24¢
Safety Door Hanger Co.'s Storm King Safety.....60%
Safety Door Hanger Co.'s U.S. Standard.....60%
Stowell's.:
Cast Rail.....₱ ft. 1½¢
Steel Rail, Plain.....2½
Wrought Bracket, 1 3-16 in.....₱ ft. 8¢
Wrought Bracket, 1¼x3-16.....₱ ft. 7¢
Swett's Hylo, per ft. 11¢.....60%
P. L. B. Steel Rail, ₱ 100 ft.....$3.00
No. 0, 1x3-16, ₱ 100 ft.....$2.75

Rakes—

Net Prices, Malleable Rakes:

	10	*12*	*14*	*16-tooth*
Shank.....	$1.50	1.60	1.75	1.85
Socket.....	$1.65	1.80	1.95	2.10

Steel, Garden and Gravel, Aug. 1, '99 List.....70%
Weldless Steel.....75&5%
Malleable Iron, Garden.....70&10%
Lawn Rakes, Metal Head, per doz.,
20 teeth.....$3.25@3.50
24 teeth.....$3.50@3.75
Fort Madison Red Head Lawn.....$2.25
Fort Madison Blue Head Lawn.....$2.70
Jackson Lawn, 20 and 30 teeth, ₱ doz., net, $4.25
Kohler's:
Lawn Queen, 20-tooth, ₱ doz.....$3.45
Lawn Queen, 24-tooth, ₱ doz. $3.60
Paragon, 20-tooth, ₱ doz.....$2.75
Paragon, 24-tooth, ₱ doz.....$3.00
Steel Garden, 14-tooth, ₱ doz.....$2.88
Malleable Garden, 14-tooth, ₱ doz..
$1.75@2.00

Rasps, Horse—

Disston's.....75%
Heller Bros.....70&5@70&10&5%
McCaffrey's American Standards 5&10&5%
New Nicholson.....70&10@75%
See also *Files.*

Razors—

Borasic.....60%
Fox Razors, No. 42, .. ₱ doz. $20.00 } 40% dis.
Fox Razors, No. 44, .. ₱ doz, $20.00 } 40% dis.
Fox Razors, No. 82, Platina, ₱ doz. -25.00

Red Devil.....60%
Silberstein:
Carbo Magnetic.....$18.00
Griffon, No. 65.....$15.00
Griffon, No. 00.....$12.00
All other Razors.....40%

Safety Razors—

Silberstein.....40%

Reels— Fishing—

Hendryx:
M 6, Q 6, A 6, B 6, M 9¼, M 16, Q 16, A 16, B 16, 4008, Rubber Populo, Nickeled Populo.....20%
Aluminum, German Silver, Bronze.25%
1240 N, 124 N.....20%
3004 N, 06 N, 6 RM, G 9.....25%
4 N, 6 PN, 24 N, 26 PN.....20%
3904 P.....33⅓%
3904 PN.....33⅓%
0924 N.....33⅓%
02084 N.....33⅓%
002904 PN.....33⅓%
802 N.....33⅓%
988 PN, 2904 N, 974 PN.....25%
5009 PN, 5009 N.....20%
Competitor, 102 P, 102 PN, 202 P, 202 PN, 102 PR, 202 PR.....20%
304 P, 304 PN, 00304 P, 00304 PN.33⅓&5

Registers—*List July 1, 1903.*

Black Jap.....
White Jap.....
Bronzed.....
Nickel Plated.....
Electro Plated.....
} 75@75&10

Revolvers—

Single Action.....85@90c
Double Act'n, except 44 cal......*$1.90*
Double Action, 44 caliber.....*$2.05*
Automatic.....*$3.60*
Hammerless.....*$4.10*
Note.—Jobbers frequently cut the above prices of manufacturers for small trade.

Riddles, Hardware Grade

16 in., per doz.....*$2.25@$2.50*
17 in., per doz.....*$2.50@$2.75*
18 in., per doz.....*$2.75@$3.00*

Rings and Ringers—

Bull Rings—

	2	*2½*	*3 Inch*
Steel..	$0.70	0.75	0.80 *doz.*
Copper..	1.00	1.15	1.40 *doz.*

Rea's Improved Self-Piercing, Copper, 2 in., ₱ doz., $1.25; 2½ in., $1.50; 3 in., $1.75.

Hog Rings and Ringers—

Hill's Rings...gro. boxes, *$4.25@4.50*
Hill's Ringers, Gray Iron. doz. *50@55c*
Hill's Ringers, Mal. Iron, doz. *70@75c*
Blair's Rings.....*per gro. $5.00@5.25*
Blair's Ringers...*per doz. $0.60@ .65*
Brown's Rings....*per gro. $5.25@5.50*
Brown's Ringers..*per doz. $0.65@ .70*

Rivets and Burrs—

Copper.....60c&c@60c&10%
Iron or Steel.....75c&5@75c&10%

Rollers—

Acme, Stowell's Anti-Friction.....50%
Barn Door, Sargent's list.....60%
Cronk's Stay.....72¢
Cronk's Brinkerhoff.....90c
Lane's Stay.....40%
Richards' Stay.....60%
Handy Adj. and Reversible No. 58....50%
O. K. Adj. and Reversible, No. 58....50%
Lag screw, Nos. 55 and 57.....50%
Fire Door, No. 59.....40%
Favorite, No. 54.....40%
Stowell's Barn Door Stay.....₱ doz. $1.00
Swett's Anti Friction.....50%
Screw and Spike Stay.....₱ doz. 65¢
Hinge Adjustable Stay.....₱ doz. 90¢

Rope—

Manila, 7-16 in. diam and larger, tarred or untarred.....*lb. 11½c*
Manila, Hay, Hide and Bale Ropes, Medium and Coarse.lb. 11½c
Sisal, 7-16 in. diam. and larger:
Mixed.....*lb. 7½c*
Pure.....*lb. 9 c*
Sisal, Hay, Hide and Bale Ropes, Medium and Coarse:
Mixed.....*lb. 7½c*
Pure.....*lb. 9 c*
Sisal, Tarred, Medium Lath Yarn:
Mixed.....*lb. 7 c*
Pure.....*lb. 8¼c*
Cotton Rope: —*Lb.*—
Best.....*¼-in. and larger*.....*15½c*
Medium..*¼-in. and larger*.....*14½c*
Common.*¼-in. and larger*.....*10½c*
Jute Rope:
Thread No. 1, ¼-in. and up, lb. 6 c
Thread No. 2, ¼-in. and up, lb. 5½c
Wool Twine.....*lb. 5½c*
Old Colony Manila Transmission Rope.....
₱ ℔ 17½¢

Wire Rope—

Galvanized.....47½&5%
Plain.....55&5%

Ropes, Hammocks—

Covert Mfg. Co.:
Jute.....40&5&5%
Sisal.....30%
Covert Saddlery Works.....60&5%

Rules—

Boxwood.....60c&10c&10%
Ivory.....35c&10@35c&10c&5%
Chapin-Stephens Co.:
Boxwood.....60@60&10%
Ivory.....35@35&10&10%
Miscellaneous.....50@50&10&10%
Combination.....55@55&10%
Stationers'.....10@10&10%
Lufkin's Steel.....50&10%
Lufkin's Lumber.....70%
Stanley R. & L. Co.:
Boxwood.....60@60&10%
Ivory.....35@35&10&10%
Upson Nut Co.:
Boxwood.....60@60&10%
Ivory.....35&10@35&10&10%

Sash Balances—See *Balance Sash.*

Sash Locks—See *Locks, Sash*

Sash Weights—See *Weights, Sash.*

Sausage Stuffers or Fillers—See *Stuffers or Fillers, Sausage.*

Saw Frames—See *Frames, Saw.*

Saw Sets—See *Sets, Saw.*

Saw Tools—See *Tools, Saw.*

Saws—

Atkins.:
Circular.....50%
Band.....50&10@60%
Cross Cuts.....35&5%
Mulay, Mill and Drag.....50%
One-Man Saw.....40%
Wood Saws.....40%
Hand, Compass, &c.....40%
Chapin-Stephens Co.:
Turning Saws and Frames..80@30&10%
Diamond Saw & Stamping Works:
Sterling Kitchen Saws.....30&10&5%
Disston's:
Circular, Solid and Inserted Tooth..50%
Band, 2 to 14 in. wide.....60%
Band, ¼ to 1¾.....60%
Crosscuts.....50%
Narrow Crosscuts.....55%
Mulay, Mill and Drag.....50%
Framed Woodsaws.....35%
Woodsaw Blades.....35%
Woodsaw Rods.....25%
Hand Saws, Nos. 12, 99, 9, 16, d100, D8, 120, 7½, 77, 8.....25%
Hand Saws, Nos. 7, 107, 107½, 3, 1, 0, 00, Combination.....30%
Compass, Keyhole, &c.....25%
Butcher Saws and Blades.....35%
C. E. Jennings & Co.'s.:
Back Saws.....25%
Butcher Saws.....30%
Compass and Key Hole Saws.....35&5%
Framed Wood Saws.....30%
Hand Saws.....20@2½%
Wood Saw Blades.....35%
Millers Falls:
Butcher Saws.....15&10%
Star Saw Blades.....15&10%
Peace & Richardson's Hand Saws.....30%
Simonds':
Circular Saws.....50%
Crescent Ground Cross Cut Saws..35%
One-Man Cross Cuts.....40&10%
Gang Mill, Mulay and Drag Saws..50%
Band Saws.....50%
Back Saws.....25@25&7½%
Butcher Saws.....35@35&7½%
Hand Saws.....25@25&7½%
Hand Saws, Bay State Brand.....45%
Compass, Keyhole, &c.....25@25&7½%
Wood Saws.....35@35&7½%
Springfield Mach. Screw Co.:
Diamond Kitchen Saws.....40&10@50%
Butcher Saws Blades.....35@40%
Wheeler, Madden & Clemson Mfg. Co.'s Cross Cut Saws.....50%

Hack Saws—

Atkins' Hack Saw Blades A A A.....25%
Disston:
Concave Blades.....25%
Keystone.....40%
Hack Saw Frames.....30%
Fitchburg File Works, The Best.....25%
C. E. Jennings & Co.'s:
Hack Saw Frames, Nos. 175, 180.....
40&7½%
Hack Saws, Nos. 175, 180, complete..
40&7½%
Goodell's Hack Saw Blades.....40%
Griffin's Hack Saw Frames..35&5&10%
Griffin's Hack Saw Blades.....35&5&10%
Springfield Mach. Screw Co.:
Diamond Hack Saw Blades.....35%
Diamond Hack Saw Frames.....50%
Star Hack Saws and Blades.....15&10%
Sterling Hack Saw Blades.....35%
Sterling Hack Saw Frames.....30& 0&5%

Scroll—

Barnes' No. 7, $15.....25%
Barnes' Scroll Saw Blades.....40%
Barnes' Velocipede Power Scroll Saw, without boring attachment, $18; with boring attachment, $20.....20%
Lester, complete, $10.00.....15&10%
Rogers, complete, $4.00.....15&10%

Scalers, Fish—

Covert's Saddlery Works.....60&10%

Scales—

Family, Turnbull's.....50@50&10%
Counter:
Hatch, Platform, ½ oz to 8 lbs. doz.$5.50
Two Platforms, ½ oz to 8 lbs. doz. $16
Union Platform, Plain...$1.70@1.90
Union Platform, Striped$1.35@3.15
Chatillon's:
Eureka.....25%
Favorite.....40%
Grocers' Trip Scales.....50%
Chicago Scale Co.:
The "Little Detective," 25 lbs.....50%
Union or Family No. 2.....60%
Portable Platform (reduced list).....50%
Wagon or Stock (reduced list)..25@35%
"The Standard" Portables.....30%
"The Standard" R. R. and Wagon.....50%

Scrapers—

Box, 1 Handle.....*doz. $2.00@2.25*
Box, 2 Handle.....*doz. $2.60@2.85*
Ship Light, $2.00; Heavy, $4.50
Adjustable Box Scraper (S. R. & L. Co) $4.00.....30@30&10%
Chapin-Stephens Co., Box.....50@50&10%

Screens, Window, and Frames—

Flyer Pattern Screens...60&5@60&5&2½%
Maine Screen Frames.....40&10&5%
Perfection Screens.....60&5@60&5&2½%
Phillips' Screen Frames, 60&5@60&5&2½%
See also *Doors.*

Screws—Bench and Hand—

Bench, Iron..doz. 1 in.. $2.50@2.75 ; 1¼, $3.00@3.25; 1¼, $3.50@3.75
Bench, Wood, Beech....doz. 30@30&5%
Hand, Wood.....30@30&5%
R. Bliss Mfg. Co., Hand.....30@30&10%
Chapin-Stephens Co., Hand.....30@30&10%
Ohio Tool Co., Bench and Hand.....30%

Coach, Lag and Hand Rail—

Lag, Common Point, list Oct. 1, '99.....80&5%
Coach and Lag, Gimlet Point, list Oct. 1, '99.....80%
Hand Rail, list Jan. 1, '81..70&10@75%

Jack Screws—

Standard List.....75&10@30&5%
Millers Falls.....50&10&10%
Millers Falls, Roller.....50&10%
P., S. & W.....50&50&5%
Sargent.....70&10%
Swett Iron Works.....75&10@30&5%

Machine—

List Jan. 1, '99.
Flat or Round Head, Iron..50@50&10%
Flat or Round Head, Brass 50@50&10%

Set and Cap—

Set (Iron or Steel).....75% } *Extra*
Sq. Hd. Cap.....70% } *10&5*
Hex. Hd. Cap.....70% } *often*
Rd. or Fillister Hd. Cap 65% } *given.*

Wood—

List July 23, 1903.
Manufacturers' printed discounts :
Flat Head, Iron.....87½&10@...%
Round Head, Iron.....85&10@...%
Flat Head, Brass.....85&10@...%
Round Head, Brass.....80&10@...%
Flat Head, Bronze....77½&10@...%
Round Head, Bronze.....75&10@...%
Drive Screws.....87½&10%

Scroll Saws—See Saws, Scroll.

Scythes—

Per doz.
Clipper Pattern, Grass..
Full Polished Clipper.....
Grain..... } *See*
Clipper, Grain..... } *Trade*
Weed and Bush..... } *Report.*

Seeders—Raisin—

Enterprise.....35@30%

Sets—Awl and Tool—

Brad Awl and Tool Sets :
Wood Hdle., 10 Awls doz. $2.00@2.25
Wood Hdle., 1¼ Awls, 6 Tools ... doz. $3.50@3.60
Aiken's Sets, Awl and Tools :
No. 20, ₱ doz. $10.00.....50&10&10%
Fray's Adj. Tool H'dls...Nos. 1, $12; 2, $18; 3, $13; 4, $9; 5, $7.....50%
C. E. Jennings & Co.'s Model Tool Holders.....30%
Millers Falls Adj. Tool H'dls, No. 1, $12; No. 4, $12; No. 5, $18.....15&10%
Stanley's Excelsior :
No. 1, $7.50; No. 2 $4.00; No. 3, $5.50.....30@30&10&10%

Garden Tool Sets—

Ft. Madison Three Piece, Hoe, Rake and Shovel.....₱ doz. sets.....$9.00

Nail—

Square.....per gro. $2.25@2.50
Round, Blk. and Pol., assorted.....gro. $1.80@2.00
Octagon.....gro. $3.50@3.75
Buck Brothers.....27½%
Cannon's Diamond Point, ₱ gr. $12..25%
Mayhew's.....per gro. $9.00
Snell's Cannon's Diamond Point, ₱ gr. $12.....25%
Snell's Corrugated, Cup Pt. per gro. $7.20
Snell's Knurled, Cup Pt.....per gro $7.20
Springfield Mach. Screw Co.:
Diamond Knurled, Cup Pt., per gro. $7.50

Rivet—

Regular list.....75@77&10%
Aiken's:
Genuine.....50&10%
Imitation.....50&10%
Atkin's:
Criterion.....40%
Adjustable.....40%
Bemis & Call Co's.:
Cross Cut.....30%
Plate.....20%
Disston's Star and Monarch.....35%
Morrill's No. 1, $15.00.....50%
Nos. 3 and 4, Cross Cut, $20.63.....50%
No. 5, Mill, $30.00.....50%
Nos. 10, 11, 98, $13.83.....50%
No. 1 Old Style, $10.00.....50%
Special, $16.25.....50%
Giant Royal, Cross Cut.....₱ doz. $8.50
Royal, Hand.....₱ doz. $5.00
Taintor Positive.....₱ doz $6.75

Shaving—

Fox Shaving Sets, No. 30, per doz, $24.00 net

Sharpeners, Knife—

Chicago Wheel & Mfg. Co.....65%

Shaves, Spoke—

Iron.....doz. $1.00@1.15
Wood.....doz. $1.75@2.00
Bailey's (Stanley R. & L. Co.).....30@30&10&10%
Chapin-Stephens Co.....30@30&10&10%
Goodell's, ₱ doz. $9.00.....15&10%
Wood's F1 and F2.....30%

Shears—

Cast Iron...	*7*	*8*	*9 in.*
Best	*$16.00*	*18.00*	*20.00 gro.*
Good	*$13.00*	*15.00*	*17.00 gro.*
Cheap	*$5.00*	*6.00*	*7.00 gro.*

Straight Trimmers, &c.:
Best quality, Jap.....70@70&10%
" Nickel.....60@60&10%
Fair qual. Jap.....30@30&5%
" Nickel.....75@75&10%
Tailors' Shears.....40@40&10%
Acme Cast Shears.....40@40&5%
Heinisch's Tailors' Shears.....10%
Wilkinson's Hedge.....1900 list 45%
Wilkinson's Branch, Lawn and Border 40%
Wilkinson's Sheep.....1900 list, 50%

Tinners' Snips—

Steel Blades.....20&5@20&10
Steel Laid Blades.....40&10@50%
Forged Handles, Steel Blades, Berlin.....40&40&10%
Heinisch's Snips.....40%
Jennings & Griffin Mfg. Co.'s, 6½ to 10 inch.....50%
Niagara Snips.....40%
P., S & W. Co.....20%

Pruning Shears and Tools—

Cronk's Grape Shears.....33⅓%
Cronk's Pruning Shears.....33⅓%
Disston's Combined Pruning Hook and Saw, ₱ doz. $18.00.....25%
Disston's Pruning Hook, ₱ doz. $12.00.....25%
John T. Henry Mfg. Co.:
Pruning Shears, all grades...40@40&5%
Orange Shears.....50&10@50&20%
Grape.....40&10@50%
Tree Pruners.....75%
P., S. & W. Co.....33⅓%

Sheaves—Sliding Door—

Stowell's Anti-Friction.....50%
Patent Roller Hatfield's, Sargent's list, 70&10%
Reading.....60%
R. & E. list.....33⅓%
Wrightsville Hatfield Pattern.....80%

Sliding Shutter—

Reading list.....45&20%
R. & E. list.....33⅓%
Sargent's list.....50&10%

Shells—Shells, Empty—

Brass Shells, Empty :
First quality, all gauges.....60&5%
Climax, Club, Rival, 10 and 12 gauge.. 65&5%
Paper Shells, Empty :
Acme, Ideal, Leader, New Rapid, Magic 10, 12, 16 and 20 gauge..25&5%
Blue Rival, New Climax, Challenge, Monarch, Defiance, Repeater, Yellow Rival, 10, 12, 16 and 20 gauge.....20%
Climax, Union, League, New Rival 10 and 12 gauge.....25%
Climax, Union, League, New Rival, 14, 16 and 20 gauge ($7.50 list)..30%
Expert, Metal Lined and Pigeon, 10, 12, 16 and 20 gauge.....33⅓&5%
Robin Hood, Low Brass.....20&10%
Robin Hood, High Brass.....30&10%

Shells, Loaded—

Loaded with Black Powder.....40%
Loaded with Smokeless Powder, medium grade.....40&5%
Loaded with Smokeless Powder, high grade.....40&10&10%
Robin Hood Smokeless Powder:
Robin Hood, Low Brass.....50%
Comets, High Brass.....50&10&5%

Shoes, Horse, Mule, &c.—

F. o. b., Pittsburg:
Iron.....per keg $4.00
Steel.....per keg 3.75
Burden's, all sizes ₱ keg.....$3.90

Shot—

Drop, up to B, 25-lb. bag.....$1.60
Drop, B and larger, per 25-lb. bag $1.85
Buck, 25-lb. bag.....$1.85
Chilled, 25-lb. bag.....$1.85

Shovels and Spades—

Association List, Nov. 15, 1902....40%

Sieves and Sifters—

Hunter's Imitation, gro. $10.50@11.00
Buffalo Metallic mfd. S. S. Co., ₱ gr.:

14&16	16&18	18&20
$13.20	$13.50	$14.40

Shaker Barber's Pat.) Flour Sifters, ₱ doz., $2.00.....90%

Sieves, Tin Rim—

Per dozen.

Mesh.....	*14*	*16*	*18*	*20*
Black, full size...	*$1.20*	*1.25*	*.30*	*1.35*
Plated, full size .	*$1.30*	*1.35*	*1.40*	*1.45*
Black, scant....		*$0.95*	*1.00*	*1.05*

Sieves, Wooden Rim—

Nested, 10, 11 and 12 Inch.
Mesh 18, Nested, doz.....$0.90@0.95
Mesh 20, Nested, doz.....1.00@1.05
Mesh 24, Nested, doz.....1.30@1.40

Sinks—

Cast Iron—

Standard list.....60@60&10%
NOTE.—*There is not entire uniformity lists used by jobbers.*

Skeins Wagon—

Cast Iron.....75@75&10%
Steel.....40@40&10%

Slates, School—

Factory Shipments.
"D" Slates.....50@50&10%
Eureka, Unexcelled Noiseless..60& 5 tens
Victor A, Noiseless....60&4 tens&5%

Slaw Cutters—See Cutters.

Snaps, Harness—

German.....40@40&10%
Covert Mfg. Co.:
Derby.....30&5&2%
High Grade.....45%
Jockey.....30&10%
Trojan.....45%
Yankee.....30&5&2%
Yankee, Roller.....30&5&2%
Covert's Saddlery Works:
Crown.....60%
German.....60%
Model.....60%
Triumph.....60%
Oneida Community Solid Swivel.....60%
Sargent's Patent Guarded.....66⅔&10%

Snaths—

Scythe.....45%

Snips, Tinners'—See Shears.

Spoons and Forks—

Silver Plated—

Good Quality.....50&10@60&5%
Cheap.....60@60&10%
International Silver Co.
1847 Rogers Bros. and Rogers & Hamilton.....40&10%
Rogers & Bro., William Rogers Eagle Brand.....50&10%
Anchor, Rogers Brand.....60%
Wm. Rogers & Son.....60&10%

Miscellaneous—

German Silver.....60@60&5%
Cattaraugus Cutlery Co.:
Seneca Silver.....50%

Tinned Iron—

Teas.....per gro. 45@50c
Tables.....per gro. 90c@$1.00

Springs—Door—

Chicago (Coil).....40&10%
Gem (Coil).....30%
Pullman (Coil).....40%
Reliance (Coil).....40&10%
Star (Coil).....30%
Torrey's Rod, 30 in.....₱ doz. $1.10
Victor (Coil).....50&10&10%

Carriage, Wagon, &c.

1¼ in. and Wider :	*Per. Lb.*
Black.....	*4½c*
Half Bright,.....	*4½c*
Bright.....	*4½c*

Painted Seat Springs :
1½ x 22 x 26, per pr.....42c
1½ x 3 x 28 per pr.....70c

Sprinklers, Lawn—

Enterprise.....35@30%
Philadelphia No. 1, ₱ doz. $12; No. 2, $15; No. 3, $24.....30%

Squares—

Nickel plated.... } *Last Jan. 5, 1900.*
Steel and Iron... } *70&10@75&10%*
Rosewood Hdl Try Square and T-Bevels.....60&10&10@70%
Iron Hdl. Try Squares and T-Bevels. 40&10@40&10&10%
Disston's Try Sq. and T-Bevels.....70%
Winterbottom's Try and Miter.....40&10@40&10&10%

Squeezers—Lemon—

Wood, Common, gro., No. 0, $5.25 @$5.50 : No. 1, $6.25@$6.50.
Wood, Porcelain Lined.
Cheap.....doz. $1.00
Good Grade.....doz. $1.25
Tinned Iron.....doz. $0.75@1.25
Iron, Porcelain Lined.....doz. $1.75

Staples—

Barbed Blind.....lb. 6@6½c
Electricians', Association list.....80&10&10&10%
Fence Staples, Plain $2.25; Galvanized.....$2.55
Poultry Netting, Staples....per lb.. 3¼@3½c
Grand Crossing Tack Co.'s list....80&10%

Steels, Butchers'—

Dick's.....30%
Foster Bros'.....30%
C. & A. Hoffmann's.....40%

Steelyards.....30@30&10%

Stocks and Dies—

Blacksmiths'.....50@50&10%
Curtis Reversible Ratchet Die Stock.25%
Derby Screw Plates.....25%
Gardner Die Stocks No. 1.....50%
Gardner Die Stocks, larger sizes.....40%
Green River.....25%
Lightning Screw Plate.....25%
Little Giant.....25%
Reece's New Screw Plates.....25%

Stone—

Scythe Stones—

Chicago Wheel & Mfg. Co:
Gem Corundum, 10 inch, $8.00 per gro., 12 inch, $10.80
Norton Emery Scythe Stones:
Less than gross lots.....₱ gro. $9.00
One gross or more.....₱ gro. $7.20
Lots of 10 gross or more....₱ gro $6.00
Pike Mfg. Co. 1901 list:
Black Diamond S. S....₱ gro. $12.00
Lamoille S. S.....₱ gro. $11.00
White Mountain S. S....₱ gro. $9.00
Green Mountain S. S....₱ gro. $6.00
Extra Indian Pond S. S.₱ gro. $7.50
No. 1 Indian Pond S. S..₱ gro. $7.00
No. 2 Indian Pond S. S..₱ gro. $4.50
Leader Red End S. S....₱ gro $4.50
Emery and Corundum, 10 inch..₱ gro.....$9.00
Pure Corundum, 10 inch. ₱ gro. $12
Crescent.....$7.00
Emery Scythe Rifles, Two Coat $8
Emery Scythe Rifles, Three Coat, $10
Emery Scythe Rifles Four Coat, $12
Balance of 1904 list 33⅓%

Oil Stones, &c.

Chicago Wheel & Mfg. Co., 1901 list:
Gem Corundum Oil, Double Grit....50%
Gem Corundum Axe, Single or Double Grit.....55%
Gem Corundum Slips.....55%
Gem Corundum Razor Hones.....50%
Pike Mfg. Co. 1901 list:

	₱ lb.
Arkansas Stone, No. 1, 3 to 5½ in.	$2.80
Arkansas Stone, No. 1, 5½ to 8 in.	$3.50
Arkansas Slips N. 1.....	$4.00
Lily White Washita 4 to 8 i.....	80¢
Rosy Red Washita, 4 to 8 in.....	60¢
Washita Stone, Extra, 4 to 8 in..	50¢
Washita Stone, No. 1, 4 to 8 in..	40¢
Washita Stone, No. 2, 4 to 8 in..	30¢
Lily White Slips.....	90¢
Rosy Red Slips.....	90¢
Washita Slips, Extra.....	80¢
Washita Slips, No. 1.....	70¢
Washita Slip, No. 2.....	40¢

33⅓%

India Oil Stones (entire list).....33⅓%
Quickcut Emery and Corundum Oil Stone, Double Grit.....33⅓%
Quickcut Emery and Corundum Axe Stone, Single or Double Grit....33⅓%
Quickcut Emery Rubbing Bricks.33⅓%
Hindostan No. 1, Regular....₱ lb 8¢
Hindostan No. 1 Small.....₱ lb 10¢
Axe Stones (all kinds).....
Turkey Oil Stones, ex. 5 tos in. ₱ lb 50¢
Queer Creek Stones, 4 to 8in.....20¢
Queer Creek Slips.....40¢
Sand Stone.....6¢
Belgian, German and Swaty Razor Hones.....50%
Natural Grit Carving Knife Hones, ₱ doz.....$3.00
Quick Edge Pocket Knife Hones, ₱ doz.....$2.50
Mounted Kitchen Sand Stone, ₱ doz.....$1.80

Stoners—Cherry—

Enterprise.....25@30%

Stoppers, Bottle—

Victor Bottle Stoppers.....₱ gro. $9.00

Stops, Bench—

Millers Falls.....15&10%
Morrill's...₱ doz., No. 1, $10.00.....50%
Morrill's, No. 2, $12.50.....50%

Door—

Chapin-Stephens Co.....60@60&10%

Plane—

Chapin-Stephens Co.....30%

Straps—Box—

Cary's Universal, case lots....20&10&10%

Hame—

Covert's Saddlery Works.....60&10%

Stretchers, Carpet—

Cast Iron, Steel Points....doz. 55@60c
Socket.....doz. $1.75
Excelsior Stretcher and Tack Hammer Combined, per doz, $6.....20%

Stuffers, Sausage—

Enterprise Mfg. Co.....25@25&7½%
National Specialty Mfg. Co., list Jan. 1, 1902.....30&5%

Sweepers, Carpet—

National Sweeper Co.: Per doz.
Auditorium, Roller Bearing (26 in case), Nickel.....$54.00
Mammoth, Roller Bearing (30 in case), Nickel.....$60.00
Marion, Roller Bearing, regular finishes, full Nickel.....$24.00
Marion Queen, Roller Bearing, full Nickel.....$24.00
Monarch, Roller Bearing, Nickel..$22.00
Monarch, Roller Bearing, Jap'ned.$21.00
Transparent, Roller Bearing, Plate Glass Top, Nickel.....$36.00
Monarch Extra, Roller Bearing, (17-inch case), Nickel.....$36.00
Monarch Extra, Roller Bearing (17-inch case), Japanned.....$33.00
National Queen, Fancy Veneers...$27.00
Perpetual, Regular Bearings, Nkl.$20.00
Perpetual, Regular Bearings, Jap.$18.00
NOTE.—*Rebates: 50c per dozen on three-dozen lots; $1 per dozen on five-dozen lots ; $2 per dozen on ten-dozen lots; $2.50 per dozen on twenty-five-dozen lots.*

Tacks, Brads, &c.—

List Jan. 15, '99.
Carpet Tacks.....90&30&10@....%
American Cut Tacks....90&25@....%
Swedes Cut Tacks. 90&30&10&5@....%
Swedes Upholsterers' Tacks..... 90&5&10¢ @....%
Gimp Tacks.....90&5&10@....%
Lace Tacks.....90&5&10@....%
Trimmers' Tacks..90&30&10&5@....%
Looking Glass Tacks. 70&10&5@....%
Bill Posters' and Railroad Tacks... 90&5&@10....%
Hungarian Nails....80&30&5@....%
Common and Patent Brads..... 80&10&5@....%
Trunk and Clout Nails..80&10@....%
NOTE.—*The above prices are for Straight Weights.* An extra 5¢ is given Star Weights** and an extra 10¢ ½ on Standard Weights.****

Miscellaneous—

Double Pointed Tacks 90 & 5 or 7 tens
Steel Wire Brads, R. & E. Mfg. Co.'s list.. 50&10@60%

See also *Nails, Wire.*

Tanks, Oil—

	Each.
Emerald, S. S. & Co.	30-gal $3.40
Emerald, S. S. & Co.	40-gal. $4.25
Queen City S. S. & Co.,	30-gal $3.65
Queen City S. S. & Co.,	60-gal $4.50

Tapes. Measuring—

American Asses' Skin.....50&10@50%
Patent Leather.....25@50&5%
Steel.....40@40&10%
Chesterman's.....25@25&5%
Eddy Asses' Skin.....40&10@50%
Eddy Patent Leather.....25@30&5%
Eddy Steel.....40@40&10%
Keuffel & Esser Co., Steel and Metallic, Lower list, 1903.....35%
Lufkin's Steel.....33⅓&35%
Lufkin's Metallic.....30&30&5%

Teeth, Harrow—

Steel Harrow Teeth, plain or headed, ⅝-inch and larger, per 100 lbs. ..$3.00

Thermometers—

Tin Case.....80&10@80&10&5%

Ties, Bale—Steel Wire.

Single Loop.....80&2½
Monitor, Cross Head, Etc.....70%

Brick Ties—

Niagara Brick Ties.....25&10%

Tinners' Shears, &c.—

See *Shears, Tinners', &c.*

Tinware—

Stamped, Japanned and Pieced, sold very generally at net prices.

Tips, Safety Pole—

Covert's Saddlery Works.....60&10%

Tire Benders, Upsetters, &c.—See *Benders and Upsetters, Tire.*

Tools— Coopers'—
L. & I. J. White ..... 20@20&5%

Hay—
Myers' Hay Tools 50%
Stowell's Hay Carriers 50%
Stowell's Hay Forks 50%
Stowell's Fork Pulleys 50%

Saw—
Atkins' Cross Cut Saw Tools 40%
Simonds' Improved 33⅓%
Simonds' Crescent 25%

Ship—
L. & I. J. White 25%

Transom Lifters—
See *Lifters, Transom.*

Traps— Fly—
Balloon, Globe or Acme ..... doz. $1.15@1.25; gro. $11.50@12.00
Harper, Champion or Paragon ..... doz. $1.25@1.50; gro. $13.00@13.50

Game—
Oneida Pattern ..... 75&10@75&10&5%
Newhouse ..... 45@45&5%
Hawley & Norton ..... 65@65&5%
Victor (Oneida Pattern) ..... 75@75&5%
O.C. Jump (Blake Pattern) 60&5@60&10%

Mouse and Rat—
Mouse, Wood, Choker, doz. holes ..... 8½@9c
Mouse, Round or Square Wire ..... doz. 85@90c
Marty French Rat and Mouse Traps (Genuine):
No. 1, Rat, Each $1.12½; ₱ doz. $12.00
No. 2, Rat, ₱ doz. $6.00; case of 50 $5.25 doz.
No. 3½, Rat, ₱ doz. $4.75; case of 72 $4.25 doz.
No. 4, Mouse, ₱ doz. $3.50; case of 7 $4.75 doz.
No. 5, Mouse, ₱ doz. $2.75; case of 150 $2.25

Trimmers. Spoke—
Wood's 50%

Trowels—
Disston Brick and Pointing 30%
Disston Plastering 25%
Disston "Standard Brand" and Garden Trowels 35%
Kohler's Steel Garden Trowels, 5 in. ..... ₱ gro. $1.80
Kohler's Steel Garden Trowels, 6 in ..... ₱ gro. $6.00
Never-Break Steel Garden Trowels ..... gro. $6.00
Rose Brick and Plastering ..... 25&5%
Woodrough & McFarlin, Plastering .. 25%

Trucks, Warehouse, &c.—
B. & L. Block Co.:
New York Pattern ..... 30&10%
Western Pattern ..... 60&10%
Handy Trucks ..... per doz. $16.00
Grocery ..... per doz. $15.00
Daisy Stove Trucks, Improved pattern ..... ₱ doz. $18.50
Model Stove Trucks ..... ₱ doz. $18.50

Tubs, Wash—*No. 1 2 3*
Galvanized, per doz. $4.75 5.25 6.00
Galvanized Wash Tubs (S. S. & Co.):
No. 1 2 3 10 20 30
Per doz., net $5.70 6.30 7.20 6.30 7.20 8.10

Twine—Miscellaneous—
Flax Twine— BC B.
No. 9, ¼ and ½-lb. Balls .. 22c@.4c
No. 12, ¼ and ½ lb. balls .. 18c@20c
No. 18, ¼ and ½-lb. Balls .. 15c@18c
No. 24, ¼ and ½-lb. Balls .. 16c@18c
No. 36, ¼ and ½-lb. Balls .. 15c@17c
Chalk Line, Cotton, ½-lb Balls 30c
Cotton Mops, 6, 9, 12 and 15 lb. to doz ..... 9@11c
Cotton Wrapping 5 Balls to lb ..... according to quality .. 13½c@20c
American 2-Ply Hemp, ¼ and ½-lb. Balls ..... 15@14c
American 3 Ply Hemp, 1-lb. Balls .. 13@14c
India 2-Ply Hemp, ¼ and ½-lb. Balls (Spring Twine) 8c
India 3-Ply Hemp, 1-lb. Balls .... 7@8c
India 3-Ply Hemp, 1¼-lb. Balls. 6@7c
2, 3, 4 and 5-Ply Jute, ½-lb. Balls ... 9@10c
Mason Line, Linen, ½-lb. Balls .. 16c
No. 264 Mattress, ¼ and ½-lb Balls. 37c
Wool, 3 to 6 ply ..... 5¾@6c

Vises—
Solid Box ..... 50&10@60%

Parallel—
Athol Machine Co:
Simpson's Adjustable 40%
Standard 40%
Amateur 25%
Columbian Hdw Co 40%
Emmert Universal:
Pattern Makers' No. 1 $15.00; No. 2, $12.50; No. 3, $10.00.
Machinist and Tool Makers' No. 4 $12.50; No. 5, $7.00; No. 6, $10.00; No. 10, $21.50.
Jewelers' No. 7 ..... $4.00
Fisher & Norris Double Screw .... 15&10%
Hollands':
Machinists' ..... 40@40&5%
Keystone ..... 65&5@70%
Lewis Tool Co ..... 20@30%
Merrill's 20%
Miller's Falls ..... 60&10%
Massey Vise Co.:
Clincher 40%
Perfect 30%
Lightning Grip 30%
Parker's:
Victor ..... 20@25%
Regulars ..... 20@25%
Vulcan's ..... 40@45%
Combination Pipe ..... 55@60%
Prentiss ..... 20@25%
Sargent's 40%
Smith & Hemenway Co.:
Machinists 40%
Jewelers 33⅓%
Snedliker's X. L. 33⅓%
Stephens' 33⅓%

Saw Filers'—
Disston's D 8 Clamp and Guide, ₱ doz $30 ..... 25%
Perfection Saw Clamps, ₱ doz. .. $5.00
Reading 60%
Wentworth's Rubber Jaw, Nos. 1, 2 and 3 ..... 45&50%

Wood Workers'—
Massey Vise Co.:
Lightning Grip 15%
Perfect 15%
Wyman & Gordon's Quick Action, 6 in., $6.00; 9 in., $7.00; 14 in., $8.00.

Miscellaneous—
Bignall & Keeler Combination Pipe Vise 60 10%
Hollands' Combination Pipe .. 60@65%
Massey's Quick Action Pipe 40%
Parker's Combination Pipe:
87 Series 30%
187 Series ..... 60&5%
No. 870 ..... 40%

Wads—Price Per M.
B. E., 11 up 60c
B. E., 9 and 10 ..... 70c
B. E., 8 ..... 80c
B. E., 7 ..... 90c
P. E., 11 up $1.00
P. E., 9 and 10 ..... 1.25
P. E., 8 ..... 1.50
P. E., 7 ..... 1.50
Ely's B. E., 11 and larger .. $1.70@1.75
Ely's P. E., 12 to 20 ..... $3.00@3.25
Dis. 15%

Ware, Hollow—
Cast Iron, Hollow—
Stove Hollow Ware:
Enameled ..... 55&10@60%
Ground ..... 60&10@65%
Plain or Unground ..... 65&10@70%
Country Hollowware per 100 lbs., $2 50
White Enameled Ware:
Maslin Kettles 70%
Covered Ware:
Tinned and Turned 40%
Enameled 50%
See also *Pots Glue.*

Enameled—
Agate Nickel Steel Ware .... 50&20
Agate Nickel Steel Ware, Specials .... 60&15%
Iron Clad Ware ..... 70&10%
Lava, Enameled ..... 40&10%
Never Break Enameled 50%

Tea Kettles—
Galvanized Tea Kettles:

Inch	*6*	*7*	*8*	*9*
Each	*45c*	*50c*	*55c*	*65c*

Steel Hollow Ware.
Avery Spiders & Griddles .... 65@65&5%
Avery Kettles 60%
Porcelained ..... 50&5@50&10%
Never Break Spiders and Griddles ..... 65&5%
Never Break Kettles 60%
Solid Steel Spiders & Griddles .... 65&5%
Solid Steel Kettles 60%

Warmers, Foot—
Pike Mfg. Co., Soapstone .... 40@40&10%

Washboards—
Solid Zinc: ₱ doz
Crescent, family size, bent frame $3.00
Red Star, family size, stationary protector $3.00
Double Zinc Surface:
Saginaw Globe, family size, stationary protector $2.65
Cable Cross, family size, stationary protector $2.90
Single Zinc Surface:
Naiad, familysize, open back perforated $2.40
Saginaw Globe, protector, family size, ventilated back $2.25
Brass Surface:
Brass King, Single Surface, open back $3.00
Nickel Plate Surface:
No. 1001 Nickel Plate, Single Surface $3.00
Glass Surface:
Glass King, Single Surface, open back, $3
Enamel Surface:
Enamel King, Single Surface, ventilated back $3.00

Washers—Leather, Axle—
Solid ..... 80c10@80c10c10%
Patent ..... 90@90c5%
Coil: ⅞ 1 1¼ 1¼ Inch.
11c 12c 13c 14c per box

Iron or Steel
Size bolt ... 5-16 ⅜ ½ ⅝ ¾
Washers $5.00 4.10 2.80 2.60 2.40
In lots less than one keg add ½c per lb., 5-lb. boxes add ½c to list.

Cast Washers—
Over ½ inch. barrel lots. per lb. ¾@2c

Wedges—
Oil Finish ..... lb. 2.25@2.30c

Weights—

Hitching—
Covert Mfg. Co ..... 40&2%
Covert's Saddlery Works ..... 60&10%

Sash—
Per ton, f.o.b. factory:
Eastern District $23.00
Western, Central and Southern Districts market unsettled, prices ranging from $17.50@19.00

Wheels, Well—
8-in., $1.50@1.55; 10-in., $1.65@1.70; 12-in., $2.25@2.35; 14-in., $3.40@3.50

Wire and Wire Goods—
Bright and Annealed:
6 to 9 ..... 80c5@80c71½&5%
10 to 18 ..... 80@80c5%
19 to 26 ..... 80c10@80c10c5%
27 to 36 ..... 80c5@80c10c10%
Galvanized:
6 to 9 ..... 77½@77½c5%
10 to 14 ..... 75½@75½c5%
15 to 16 ..... 75c7½@75c10c5%
19 to 26 ..... 75c5@75c10c5%
27 to 36 ..... 72½c5@72c7½%
Coppered:
6 to 9 ..... 77½@77½c5%
10 to 14 ..... 77½@77½c7½%
15 to 18 ..... 75c10@75c10c5%
19 to 26 ..... 75c10c5@80c5%
27 to 36 ..... 75@75c5%
Tinned:
6 to 14 ..... 77½@77½c7½%
15 to 18 ..... 75c5@75c10%
Annealed, Stc l and Tinned, on Spools ..... 75c10@75c10c5%
Brass & Copper on Spools ..... 60c5@60c10c5%
Brass, list Feb. 26, '96 ..... 50%
Copper, list Feb. 26, '96 ..... 15%
Cast Steel Wire 50%
Wire Clothes Line, see *Lines.*
Wire Picture Cord, see *Cord.*

Bright Wire Goods—
List June 24, 1903. 90c10c10c10@ ..%

Wire Cloth and Netting—
Galvanized Wire Netting ..... 80c10@80c10c5%
Painted Screen Cloth, per 100 ft. $1.25
Standard Galv. Hardware Grade:
Nos. 2, 2½ and 3 Mesh, sq. ft. 3c
Nos. 4 and 5 Mesh, sq. ft. 3½c
No. 6 Mesh, sq ft 3½c
No. 8 Mesh, sq ft 4c

Wire Barb—See *Trade Report.*

Wrenches—
Agricultural ..... 75c10@75c10c5%
Alligator 70%
Baxter Pat'rn S Wrenches ..... 70c5@70c10%
Drop Forged S ..... 45@45c5%
Acme ..... 60&10%
Alligator Pattern 70%
Bull Dog 70%
Bemis & Call's:
Adjustable S 40%
Adjustable S Pipe 40%
Bemis Pipe 60%
Brigg's Pattern 40%
Combination Black ..... 40&5%
Combination Bright 40%
Merrick's Pattern 50%
Boardman's 33⅓%
Coes' Genuine Knife Hdl. ..... 40&10&5&5%
Coes' Genuine Steel Hdl. ..... 40&10&5&5%
Coes' Genuine Key Model ..... 40&10&5&5%
Coes' "Mechanics' ..... 40&10&10&5&5%
Donohue's Engineer ..... 40&10%
Eagle ..... 50&10%
Elgin Wrenches 40%
Elgin Monkey Wrench Pipe Jaws 33⅓%
Gem Pocket 30%
Hercules 70%
W. & B. Machinist:
Case lots ..... 50&5%
Less than case lots 70%
Improved Pipe (W & B.) 60%
Solid Handles, P.S. & W ..... 50@50&5%
Stillson 65%
Vulcan Chain 70%

Wrought Goods—
Staples, Hooks, &c., list March 17 '02 ..... 90@90c10%

Yokes Neck—
Covert Saddlery Works, Trimmed 70%
Covert Saddlery Works, Neck Yoke Centers 70%

Yokes, Ox, and Ox Bows—
Fort Madison's Farmers & Freighters' .. list net

Zinc—
Sheet ..... per 100 lbs. $6 35@6 60

PAINTS, OILS AND COLORS

White Lead, Zinc, &c.
Lead, English white, in Oil ... 9½@ 9¼
Lead, American White, in Oil:
Lots of 500 ℔ or over ..@ 6¼
Lots less than 500 ℔ ..@ 7
In Barrels ..@ 6
Lead, White, in oil, 25 ℔ tin pails, add to keg price ..@ ¼
Lead, White, in oil, 12½ ℔ tin pails, add to keg price ..@ 1
Lead, White, in oil, 1 to 5 ℔ assorted tins, add to keg price ..@ 1¼
Lead, American, Terms: For lots 12 tons and over ¼¢ rebate; and 2% for cash if paid in 15 days from date of invoice; for lots of 500 lbs. and over 2% for cash if paid in 15 days from date of invoices; for lots of less than 500 lbs. net.
Lead White, Dry in bbls ..@ 6
Zinc, American, dry ..₱ ℔ 4½@ 4¾
Zinc, French:
Paris, Red Seal, dry ..7¼
Paris, Green Seal, dry ..6¼
Antwerp Red Seal, dry ..6¼
Antwerp, Green seal, dry ..8¼
Zinc, V. M. French, in Poppy Oil, Green Seal:
Lots of 1 ton and over ..11¼@11¾
Lots of less than 1 ton ..11¾@12
Zinc, V. M. French, in Poppy Oil, Red Seal:
Lots of 1 ton and over ..10 @10½
Lots of less than 1 ton ..10¼@10¾
Discounts.—French Zinc.—Discounts to buyers of 10 bbl. lots of one or mixed grades, 1%; 25 bbls., 2%; 50 bbls., 4%.

Dry Colors.
Black, Carbon ..₱ ℔ 5 @10
Black, Drop, Amer ..4 @ 6
Black, Drop, Eng ..5 @15
Black, Ivory ..16 @20
Lamp, Com ..4½@ 6
Blue, Celestial ..₱ ℔ 4 @ 6
Blue, Chinese ..29 @ 32
Blue, Prussian ..27 @30
Blue, Ultramarine ..4½@15
Brown, Spanish ..½@ 1
Carmine, No. 40 ..₱ ℔ $3.80@4.00
Green, Chrome, ordinary ..3½@ 6
Green, Chrome, pure ..17 @25
Lead, Red, bbls. ½ bbls. and kegs:
Lots 500 ℔ or over ..@ 6¼
Lots less than 500 ℔ ..@ 7
Litharge, bbls. ½ bbls. and kegs:
Lots 500 ℔ or over ..@ 6¼
Lots less than 500 ℔ ..@ 7
Ocher, American ..₱ ton $8.50@16.00
Ocher, American Golden ..2½ @ 3½
Ocher, French ..1¾ @ 2½
Ocher, Foreign Golden ..2½@ 3½
Orange Mineral, English ..₱ ℔ 8½@ 10½
Orange Mineral, French ..10½@11¾
Orange Mineral, German ..7 @10
Orange Mineral, American ..8 @ 8½
Red, Indian, English ..4½@ 8½
Red, Indian, American ..3 @ 3½
Red, Turkey, English ..4 @ 6
Red, Tuscan, English ..7 @10
Red, Venetian, Amer. ..₱ 100 ℔ $0.50@1.25
Red Venetian, English ..₱ 100 ℔ 1.15@1.75
Sienna, Italian, Burnt and Powdered ..₱ ℔ 8 @ 9½
Sienna, Ital., Raw, Powd ..8 @ 6½
Sienna, American, Raw ..1½@ 2
Sienna, American, Burnt and Powdered ..₱ ℔ 1½@ 2
Talc, French ..₱ ℔ 1 @ 1½
Talc, American ..75 @1.25
Terra Alba, French, ₱ 100 ℔ .90 @1.00
Terra Alba, English ..90 @1.00
Terra Alba, American No. 1 ..60 @70
Terra Alba, American No. 2 ..45 @50
Umber, Turkey, Bnt. & Pow. ₱ ℔ 2½@ 3½
Umber, Turkey, Raw & Powd. 2 @ 3½
Umber, Bnt. Amer ..1½@ 2
Umber, Raw, Amer ..1½@ 2
Yellow, Chrome ..11 @14
Vermilion, American Lead ..10 @25
Vermilion, Quicksilver, bulk ..@55
Vermilion, Quicksilver, bags ..@55
Vermilion, English, Import ..75 @80
Vermilion Chinese ..$0.90@1.00

Colors in Oil.
Black, Lampblack ..12 @14
Blue, Chinese ..36 @46
Blue, Prussian ..32 @36
Blue, Ultramarine ..13 @16
Brown, Vandyke ..11 @14
Green, Chrome ..10 @15
Green, Paris ..@24
Sienna, Raw ..12 @15
Sienna, Burnt ..12 @15
Umber, Raw ..11 @14
Umber, Burnt ..11 @14

Miscellaneous.
Barytes, White Foreign, ..₱ ton $17.50@20.00
Barytes Amer. floated ..18.50@20.00
Barytes, Crude, No. 1 ..10.00@11.00
Chalk, in bulk ..₱ ton 3.00@ 3.25
Chalk, in bbls ..₱ 100 ℔ @ 35
China Clay, English ..₱ ton 11.00@17.00
Cobalt, Oxide ..₱ 100 ℔ 2.50@ ...
Whiting, Common ..₱ 100 ℔ .45@ .48
Whiting, Gilders ..55@ .57
Whiting, extra Gilders' ..58@ .60

Putty.
In bladders ..1¾@2¼
In bulk ..1¾@2
In cans 1 ℔ to 5 ℔ ..2¼@4¼
In cans 12 ½ ℔ to 25 ℔ ..1¾@2¼

Spirits Turpentine.
In Oil bbls ..55¼@56¼
In machine bbls ..55¼@56¼

Glue.
Cabinet ..₱ ℔ 11 @15
Common Bone ..6 @ 8
Extra White ..18 @24
Foot Stock, White ..11 @14
Foot Stock, Brown ..7 @10
German Hides ..12 @18
French ..10 @40
Irish ..13 @16
Low Grade ..8 @11
Medium White ..14 @17

Gum Shellac— Cts. per lb.
Bleached, Commercial ..43 @..
Bone Dried ..54 @..
Button ..45 @60
Diamond I ..60 @..
Fine Orange ..52 @54
A. C. Garnet ..46½@..
D. C ..98 @..
Octagon B ..53½@..
T. N ..48 @49
V. S. O ..60 @..

Animal, Fish and Vegetable Oils.
Linseed, City, raw ..₱ gal. 45 @46
Linseed, City, boiled ..47 @48
Linseed, State and West'n, raw 43 @44
Linseed, raw Calcutta seed ..@65
Lard, Prime, Winter ..56 @58
Lard, Extra No. 1 ..49 @51
Lard, No. 2 ..86 @38
Cotton-seed, Crude, f.o.b mills 22½@23
Cotton-seed, Summer Yellow, prime ..29½@30
Cotton-seed Summer Yellow, off grades ..@..
Sperm, Crude ..@55
Sperm, Natural Spring ..56 @57
Sperm, Bleached Spring ..59 @60
Sperm, Natural Winter ..57 @58
Sperm, Bleached Winter ..60 @61
Tallow, Prime ..48 @49
Whale, Crude ..@..
Whale, Natural Winter ..44 @45
Whale Bleached Winter ..46 @47
Menhaden, Brown, Strained ..29 @30
Menhaden, Light Strained ..30 @31
Menhaden, Bleached Winter ..32 @33
Menhaden, Ex Bleached Winter 34 @35
Menhaden, Southern ..@..
Cocoanut, Ceylon ..6½@ 7
Cocoanut, Cochin ..7¼@ 7¾
Cod, Domestic ..33 @34
Cod, Newfoundland ..37 @..
Red Elaine ..30 @32
Red Saponified ..₱ ℔ 4½@4¾
Olive, Italian, bbls ..51 @ 53
Neatsfoot prime ..50 @ 51
Palm, prime, Lagos ..₱ ℔ 5¾@ 6

Mineral Oils.
Black, 20 gravity, 25@30 cold test ..₱ gal. 11 @12
Black, 20 gravity, 15 cold test. 12 @13
Black, Summer ..11 @12
Cylinder, light filtered ..18½@19½
Cylinder, dark filtered ..16½@17½
Paraffine, 903-907 gravity ..13 @13½
Paraffine, 903 gravity ..12 @12½
Paraffine, 883 gravity ..9½@10
Paraffine, red ..12 @13½
In small lots ½¢ advance.

For the Table of "Current Metal Prices" see the First Issue of Every Month.